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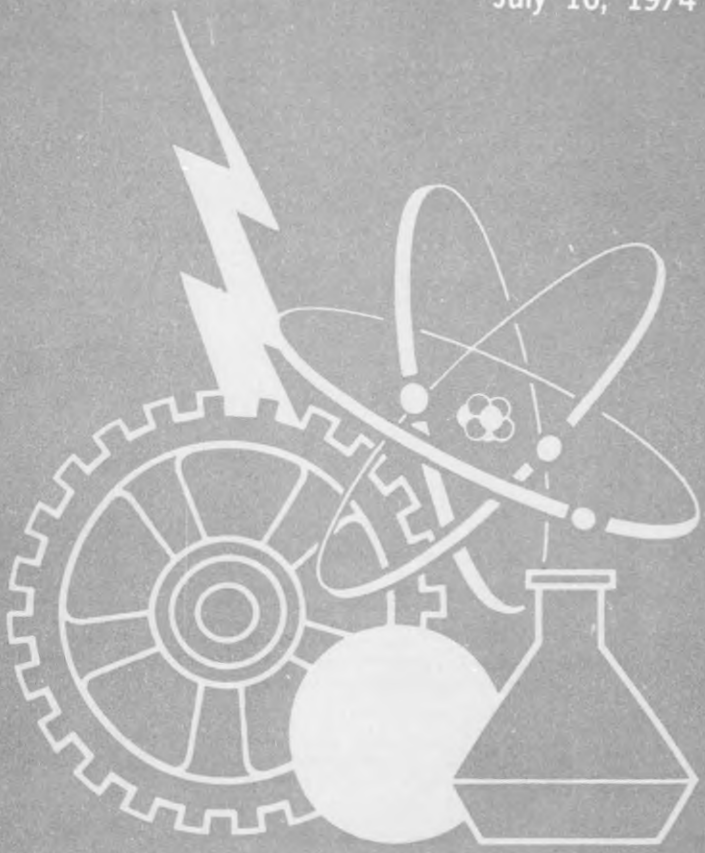

U. S. DEPARTMENT OF COMMERCE
Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

July 16, 1974 Volume 924 Number 3

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PATENT OFFICE NOTICES

Trial Voluntary Protest Program

After reviewing the comments received as a result of the Notice of Proposed Rule Making entitled, "Protests to the Grant of a Patent," dated May 15, 1973, published at 911 O.G. 760, the Patent Office has decided to institute a Trial Voluntary Protest Program limited to 2,000 applications.

The underlying purpose of protest proceedings is to assist the Patent Office by bringing the best prior art and information relevant to the patentability of a patent application to the examiner's attention. Occasionally patents are held invalid by the courts because of prior art or other information which was not available or known to the examiner. Protest proceedings are intended to elicit from the public such prior art or other information not cited by the examiner which bears upon the question of patentability.

Several benefits are expected to accrue from protest proceedings. First, patents would have a more meaningful presumption of validity because of appropriate consideration by the examiner of additional evidence submitted by the public. Second, potential competitors of the applicant would benefit from having the opportunity to call to the attention of the Patent Office information that could either prevent a patent from issuing or lead to claims of more restricted scope. Further, the protest proceedings may be helpful in minimizing the more expensive conventional procedure of litigating the question of validity at a later date. Finally, the public would benefit from the resultant strengthening of the presumption of validity of patents granted on applications which underwent protest proceedings and the strengthening of the patent system for its intended purposes.

Since legislation is pending in Congress which would make opposition or protest proceedings mandatory in all allowed applications, it appears appropriate and desirable to gain some experience at this time with a Trial Voluntary Protest Program. The Patent Office would welcome any comments, from those who elect to participate in the program, relative to their experience concerning the effectiveness, costs, etc.

Since the trial program is voluntary and limited to a selected number of applications, no rule changes are contemplated or considered necessary at this time.

Applications Involved

The 2,000 applications involved in the Trial Voluntary Protest Program will include 135 applications allowed in each of the 14 examining groups excluding Group 220, and 110 applications allowed in Group 220, after July 1, 1974. No other applications will be made part of the trial program. The applications in the trial will be limited to the 1970 filing date series and will exclude all reissue, plant, and design applications. Also, applications which have been invoved in proceedings before the Board of Appeals, the Board of Patent Interferences, or the courts will be excluded from the trial program.

Waiver of Confidentiality

A form letter will be sent to the applicant of each of the 2,000 applications involved in the trial. The letter will indicate that the application is one of the selected applications and will afford to applicant the opportunity to participate in the program by filing a voluntary waiver of confidentiality thereby making his application available for protest.

Response to Request for Waiver of Confidentiality

The applicant will have two months after the mailing of the form letter concerning waiver of confidentiality to either (1) file the waiver of his right to keep the application confidential, signed by the applicant, assignee of record, or attorney or agent of record, or (2) indicate that he does not desire to participate in the trial program. A response from the applicant to the form letter will be requested. Such response is considered desirable to allow prompt processing of all 2,000 applications selected for the Trial Voluntary Protest Program. No extension of the two month period will be granted.

If the applicant declines to participate in the program, his application will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance. In these situations no record of the correspondence will be made in the application file. Also, the Patent Office will not keep any records concerning the identity of the particular applications where the opportunity to participate in the program was declined.

If a proper waiver of the right to confidentiality is submitted within two months of the date of the form letter regarding voluntary waiver, the application will be placed in the Trial Voluntary Protest Program.

Following an affirmative response a notice, identifying the application will be published in the Official Gazette similar to that used for patents. The notice will include necessary identifying information, including the examining group to which the application is assigned, an illustrative figure, a representative claim or claims, and a listing of references cited by the Patent Office.

On the date the notice is published in the Official Gazette, the application file will also be made available for public inspection for the duration of the protest period in the examining group and the application will be available in printed form similar to a patent. The printed application will include all the figures and the specification, including claims. All printed applications will be classified and placed in the Patent Office search files. Copies of the printed applications will be available to the public at the prices set by statute for patent copies.

Period for Filing Protest

Protesters will have a period of three months running from date of publication of the noice in the Official Gazette in which to file their protest in the Patent Office. Each protest must be filed in duplicate, and include the grounds which the protester believes have a bearing on the patentability of any claim contained in the published application. If the grounds are based on prior art, the protest should include a copy of the prior art together with an explanation of the relevance of such prior art to the allowed claims. In addition or alternatively, the protester will have the opportunity to comment on the manner in which the prior art of record was applied and raise any other matter which may affect the patentability of the claimed invention. In cases where prima facie evidence is presented as to prior public use or sale of the invention, the public use proceedings set forth in Rule 292 will be used to provide the protester presenting such evidence with an opportunity to be heard. No extension of the three month period will be granted.

Protester Involvement

A protester may elect to either (1) have his identity kept secret and have no further participation in the proceedings or (2) be recognized in the application file and become involved in any future prosecution of the application.

In both instances the protester must initially identify himself and give his address; however, if he elects to forego future involvement, he may identify himself on a cover letter and request that the cover letter not be made of record. In such instances the cover letter will be destroyed upon completion of prosecution when the application is forwarded to either Patent Issue Division or the abandoned files.

Consideration of Protest

The published allowed application files will be retained ruring the protest period in the examining groups. The examining groups will receive all protests filed, acknowledge receipt thereof, and make them of record in the application files. At the end of the period for filing protests, three months after publication in the Official Gazette, those applications in which no protests have been filed will be forwarded to the Patent Issue Division for mailing of the Notice of Allowance, while those applications in which protests have been filed will be referred to the group director for decision as to whether prosecution should be reopened.

If the group director decides that the evidence submitted does not constitute a prima facie showing of non-patentability of any allowed claim, the application will be forwarded to the Patent Issue Division for mailing of the Notice of Allow-

ance. The protesters who elected to participate in subsequent prosecution will be notified that the prosecution has not been reopened, and the applicant will be sent the duplicate copy of all protests. The group director's decision will be final and not subject to petition by any protester.

If the group director decides that the submitted evidence constitutes a prima facie showing of non-patentability of any allowed claim, prosecution of the application will be reopened and the application will be re-examined. The decision to reopen prosecution will be communicated to the applicant by means of an Office action, signed by a primary examiner, rejecting any claim believed unpatentable. The duplicate copy of all protests will be mailed to the applicant with the Office action. Protesters who elected to participate in later prosecution and submitted evidence on which the rejection is based will be identified in the Office action and will also receive copies of this and subsequent Office actions. Other protesters who elected to participate in later prosecution will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them. The applicant will normally be given a three month shortened statutory period to respond to the Office action.

RESPONSE TO SUBSEQUENT OFFICE ACTIONS BY THE APPLICANT

As a result of re-exmination of the application, the applicant will be permitted to respond, such as by presenting amended or new claims which will be subject to further consideration by the primary examiner. In order to allow protesters, who submitted evidence on which a rejection in the Office action is based and who elected to participate in later prosecution, to comment upon further proceedings, applicant will be required to serve by mail upon each protester identified in the Office action, a copy of any response, including appeal brief, filed. Indication of such service will be a required component of a complete response. Applicant need only reply to the rejections and objections made in the Office action. There need be no specific response to any other points raised by the protesters.

COMMENT ON APPLICANT'S RESPONSE BY THE PROTESTER

Each protester served will be allowed one month, running from the date applicant's response or brief is received in the Patent Office, to file comments relating thereto. All communications from protesters must be in writing. Examiner interviews with the protesters will not be permitted. No extensions of the one month period will be granted.

CONCLUSION OF PROSECUTION

If, after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified thereof and the application will be forwarded to the Patent Issue Division. A decision of the primary examiner to allow an application will not be subject to petition by any protester.

C. MARSHALL DANN,
Commissioner of Patents.

May 7, 1974.

Short Titles for International Trademark Classes

The United States Patent Office will, effective immediately, associate the following word titles with the respective international trademark class numbers:

GOODS

1 Chemicals
2 Paints
3 Cosmetics and cleaning preparations
4 Lubricants and fuels
5 Parmaceuticals
6 Metal goods
7 Machinery
8 Hand tools
9 Electrical and scientific apparatus
10 Medical apparatus
11 Environmental control apparatus
12 Vehicles
13 Firearms
14 Jewelry
15 Musical instruments
16 Paper goods and printed matter
17 Rubber goods
18 Leather good
19 Non-metallic building materials
20 Furniture and articles not otherwise classified
21 Housewares and glass
22 Cordage and fibers
23 Yarns and threads
24 Fabrics
25 Clothing
26 Fancy goods
27 Floor coverings
28 Toys and sporting goods
29 Meats and processed foods
30 Staple foods
31 Natural agricultural products
32 Light beverages
33 Wines and spirits
34 Smokers' articles

SERVICES

35 Advertising and business
36 Insurance and financial
37 Construction and repair
38 Communication
39 Transportation and storage
40 Material treatment
41 Education and entertainment
42 Miscellaneous

These short titles are not an official part of the international classification. Their purpose is to provide a means by which the general content of numbered international classes can be quickly identified. Therefore the titles selected consist of short terms which generally correspond to the major content of each class but which are not intended to be more than merely suggestive of the content. Because of their nature these titles will not necessarily disclose the classification of specific items. The titles are not designed to be used for classification but only as information to assist in the identification of numbered classes. For determining classification of particular goods and services and for full disclosure of the contents of international classes, it is necessary to refer to the Alphabetical List of Goods and Services and to the names of international classes and the explanatory notes in the volume entitled "International Classification of Goods and Services to Which Trade Marks Are Applied," published by the World Intellectual Property Organization (WIPO). The full names of international classes appear also in Section 6.1 of the Trademark Rules of Practice.

The short titles are being printed in the OFFICIAL GAZETTE in association with the international class numbers under MARKS PUBLISHED FOR OPPOSITION, Sections 1 and 2, under TRADEMARK REGISTRATIONS ISSUED, PRINCIPAL REGISTER, Section 1, and under SUPPLEMENTAL REGISTER, Sections 1 and 2.

Adoption of the international classification by the United States as its system of classification was announced in the OFFICIAL GAZETTE of June 26, 1973 (911 O.G. TM 210).

Date: June 18, 1974.

RENE D. TEGTMEYER,
Assistant Commissioner for Trademarks.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,670,293, F. H. Stark, FOOD PRODUCT FLAVORING COMPOSITION AND METHOD OF PREPARATION THEREOF, **filed** July 18, 1968, D.C., W.D. Wis. (Madison), Doc. 68–C–122, *Stuart M. Stebbings* v. *Bob White Candy Company and Samuel A. Loniello.* Stipulation and order entered June 30, 1971, dismissing the action.

2,773,119, L. W. Parker, TUNING SYSTEM FOR RADIO AND TELEVISION RECEIVERS, **filed** Jan. 18, 1974, D.C., S.D. Fla. (Miami), Doc. 74–70–C–NCR, *Louis W. Parker* v. *Ford Motor Company, Philco-Ford Corporation and Philco Distributors.*

2,827,665, Rogers, Jr., Bender and Ten Broeck, MANUFACTURE OF FLEXIBLE CELLULAR MATERIAL, **filed** Dec. 28, 1973, D.C., W.D.N.C. (Charlotte), Doc. C–C–73–298, *The Goodyear Tire & Rubber Company* v. *Reeves Brothers, Inc.*

2,902,784, S. Deva Ram, ROOM SERVICE INDICATOR, **filed** Dec. 18, 1973, D.C. Del. (Wilmington), Doc. 4778, *Lily D'Aguiar* v. *Marriott Corporation.*

2,925,609, R. A. Richardson, SELF RIMMING SINK MOUNTING, **filed** Apr. 13, 1970, D.C., N.D. Ohio (Cleveland), Doc. C–70–349, *United States of America on relation of George A. Scharmer* v. *Carrollton Mfg. Co.* Memorandum and order, motion of defendants for summary judgment dismissing plaintiff's complaint against them is granted, Jan. 7, 1974.

3,052,982, Weinstein, Katz, and Weinstein, FUSED PORCELAIN-TO-METAL TEETH, **filed** Jan. 2, 1974, D.C. Conn. (Bridgeport), Doc. B–74–2, *Brian S. Jones, as receiver for Permadent Products Corp.* v. *County Dental Porcelain Laboratory.*

3,112,018, C. S. Gehrie, VALANCE, **filed** Dec. 18, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3187, *Presto Lock Company* v. *Stebco Products Corporation.*

3,197,681, G. R. Broussard, SEMICONDUCTOR DEVICES WITH HEAVILY DOPED REGION TO PREVENT SURFACE INVERSION; **3,226,613,** J. C. Haenichen, HIGH VOLTAGE SEMICONDUCTOR DEVICE, **filed** Sept. 21, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2328, *Texas Instruments, Inc.* v. *Motorola, Inc.* Cause dismissed, Sept. 11, 1972.

3,222,769, G. R. Le Plae, METHOD OF MAKING STRIP STRUCTURES, **filed** Aug. 4, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1972–ALS, *Essex International, Inc.* v. *Trim-Lok Inc. and Lear Siegler Inc.* Action is dismissed without prejudice to the right to reopen if settlement is not consummated on or before Feb. 11, 1974, entered Jan. 17, 1974.

3,226,613. (See 3,197,681.)

3,332,485, W. A. Colburn, METHOD FOR PRODUCING PETROLEUM, **filed** Dec. 1, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2870–R, *Petrecal* v. *The City of Long Beach and Thums Long Beach.* Claims 1, 5, 7, 9, 11, 12 and 13 are invalid and void; complaint dismissed with prejudice, Jan. 8, 1974.

3,408,572, F. C. Marino, CONTROLLED AMPLITUDE FREQUENCY SHIFT SIGNAL GENERATOR; **3,472,448,** Wolf, Marino, Simon and Kummer, RECORDING SYSTEM FOR BUSINESS MACHINES, **filed** May 21, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1249, *Digtronics Corporation* v. *Jewel Companies, Inc.* By stipulation case dismissed with prejudice, Dec. 13, 1972.

3,419,876, Edwards and Winterstein, STREAMLINED ANTENNA AND METHOD OF MAKING THE SAME, **filed** May 18, 1971, D.C. Conn. (New Haven), Doc. 14410, *Tenatronics, Ltd., Inc.* v. *Yankee Metal Products Corporation.* Consent judgment of infringement entered Dec. 14, 1973.

3,514,674, R. E. Self, HIGH ENERGY LOSS FLUID CONTROL, **filed** Jan. 15, 1974, D.C., S.D. Iowa (Des Moines), Doc. 74–11–1, *Fisher Controls Company, Inc.* v. *Control Components, Inc. and Richard E. Self.*

3,542,914, J. M. La Vergne, Jr., METHOD OF HOLLOW ARTICLE CASTING, **filed** Dec. 10, 1973, D.C., W.D. Wash. (Tacoma), Doc. 218–73C3, *J. M. LaVergne Manufacturing Co., Inc. and Joseph F. LaVergne, Jr.* v. *Cascade Septic Service, Inc. and Robert Bash and Hans Startveit, doing business as Olympic Machine and Welding Works.*

3,556,391, D. W. Kosterka, PHONOGRAPH RECORD ALBUM PACKAGE, **filed** Jan. 19, 1971, D.C., S.D.N.Y., Doc. 71–C–2816, *Album Graphics, Inc.* v. *Ivy Hill Lithograph Corp.* Filed judgment, defendant have judgment against plaintiff dismissing the complaint, Dec. 17, 1973.

3,578,452, K. Parker, DEVELOPING COMPOSITIONS FOR DIAZOTYPE MATERIALS, **filed** Jan. 7, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c41, *Addressograph Multigraph Corp.* v. *Sheffield S. Campbell and Campbell Assoc.*

3,580,982, J. B. Havewala, POLE RISER GUARD-BACK-UP PLATE COMBINATION, **filed** Jan. 18, 1974, D.C. W.D. Okla. (Oklahoma City), Doc. C–74–75–C, *Haskon, Inc.* v. *Indian Head, Inc.*

3,613,612, C. Kennedy, HIGH STRENGTH TUFTED PILE FABRIC, **filed** July 28, 1972, D.C., N.D. Ga. (Atlanta), Doc. 16931, *Thiokol Chemical Corporation* v. *E. T. Barwick and Amoco Fabrics Company.* Plaintiff take nothing and action dismissed, Dec. 27, 1973.

3,641,391, A. R. Badewitz, DEVICE FOR RESTORING CATHODE EMISSION IN CATHODE-RAY TUBE GUNS, **filed** Dec. 19, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–3016–DWW, *Beltron, Inc. and Appleway Electronics, Inc.* v. *REM Electronic Instruments, Inc., Ron Simon and Manuel P. Prazeres.*

3,672,969, Nobel and Ostrow, ELECTRO-PEPOSITION OF GOLD AND GOLD ALLOYS, **filed** Jan. 16, 1974, D.C.N.J. (Newark), Doc. 74–73–C, *Lea-Ronal, Inc.* v. *Auric Corporation.*

3,693,559, R. H. Allen, POLLUTION CONTROL APPARATUS FOR COMBUSTIVE DISMANTLING, **filed** June 14, 1973, D.C., S.D. Ind. (Evansville), Doc. EV 73–C–47, *The David J. Joseph Company* v. *Evans Products Company et al.* Entry of stipulated dismissal without prejudice entered Jan. 7, 1974.

3,699,735, M. G. Smith, SEALING GASKET, **filed** Jan. 18, 1974, D.C., S.D. Tex. (Houston), Doc. CA 74–H–105, *Helmerich & Payne, Inc.* v. *Ragsdale Pardoe Properties, Inc.*

3,736,197, Messerschmidt, Heyman and Johnsen II, POWDERLESS ETCHING BATH COMPOSITIONS AND ADDITIVES, **filed** Dec. 22, 1973, D.C.N.J. (Newark), Doc. 1844–73, *Mona Industries, Inc.* v. *Philip A. Hunt Chemical Corporation.*

Certificates of Correction for the Week of July 16, 1974

D. 230,179	3,760,118	3,777,887	3,789,961
P.P. 3,351	3,760,385	3,778,168	3,789,993
Re. 27,528	3,760,640	3,778,264	3,790,032
Re. 27,918	3,760,649	3,778,489	3,790,210
3,443,667	3,760,925	3,778,597	3,790,296
3,496,827	3,761,240	3,778,600	3,790,324
3,529,543	3,761,401	3,778,870	3,790,416
3,551,797	3,762,842	3,779,129	3,790,440
3,574,601	3,762,990	3,779,224	3,790,649
3,599,095	3,763,575	3,779,514	3,790,662
3,613,428	3,764,244	3,779,539	3,791,545
3,619,302	3,764,534	3,779,926	3,791,706
3,632,836	3,765,011	3,779,999	3,791,834
3,645,520	3,765,270	3,780,048	3,791,904
3,649,375	3,766,200	3,780,101	3,792,032
3,652,290	3,766,333	3,780,183	3,792,074
3,670,797	3,766,852	3,780,490	3,792,158
3,672,399	3,767,221	3,781,280	3,792,408
3,674,800	3,767,247	3,781,351	3,792,442
3,674,801	3,767,312	3,781,427	3,792,585
3,676,843	3,767,434	3,781,482	3,792,632
3,678,016	3,767,526	3,781,534	3,792,704
3,688,225	3,767,563	3,781,851	3,793,052
3,692,432	3,767,730	3,782,002	3,793,364
3,699,089	3,767,842	3,782,076	3,793,524
3,700,360	3,767,907	3,782,120	3,793,574
3,702,799	3,768,010	3,782,894	3,794,029
3,705,038	3,768,577	3,782,961	3,794,122
3,706,240	3,768,869	3,782,988	3,794,187
3,708,352	3,769,415	3,783,248	3,794,246
3,708,476	3,769,626	3,783,473	3,794,913
3,714,941	3,770,447	3,783,693	3,795,049
3,720,992	3,770,503	3,783,765	3,795,159
3,721,668	3,770,722	3,783,975	3,795,190
3,723,514	3,770,746	3,784,323	3,795,564
3,723,838	3,770,780	3,784,324	3,795,693
3,725,514	3,770,926	3,784,454	3,795,732
3,725,578	3,770,994	3,784,489	3,795,762
3,726,684	3,771,145	3,784,629	3,795,870
3,726,886	3,771,156	3,784,675	3,795,965
3,728,095	3,771,370	3,784,709	3,795,966
3,728,302	3,771,904	3,784,897	3,796,011
3,729,234	3,772,045	3,785,198	3,796,186
3,736,057	3,772,096	3,785,412	3,796,479
3,737,433	3,772,225	3,785,916	3,796,623
3,738,101	3,772,333	3,785,990	3,796,636
3,739,048	3,772,360	3,785,994	3,796,658
3,741,910	3,772,385	3,786,090	3,796,663
3,744,655	3,772,475	3,786,093	3,796,821
3,745,138	3,772,923	3,786,247	3,796,838
3,745,141	3,772,939	3,786,330	3,796,963
3,745,411	3,772,962	3,786,416	3,796,970
3,746,012	3,773,502	3,786,569	3,797,089
3,746,312	3,773,669	3,786,596	3,797,208
3,746,719	3,773,926	3,786,722	3,797,267
3,747,201	3,774,166	3,787,114	3,797,277
3,747,601	3,774,200	3,787,174	3,797,477
3,749,413	3,774,225	3,787,307	3,797,632
3,749,575	3,774,301	3,787,387	3,797,774
3,752,094	3,774,408	3,787,389	3,798,175
3,753,113	3,775,157	3,787,429	3,798,180
3,753,943	3,775,218	3,787,521	3,798,276
3,754,984	3,775,273	3,787,724	3,798,281
3,755,092	3,775,377	3,787,901	3,798,546
3,755,558	3,775,432	3,788,303	3,798,722
3,757,864	3,775,717	3,788,639	3,799,102
3,758,270	3,776,159	3,788,839	3,799,625
3,758,427	3,776,503	3,788,884	3,799,794
3,758,595	3,776,536	3,789,107	3,799,866
3,758,762	3,776,625	3,789,192	3,799,897
3,758,809	3,777,278	3,789,271	3,799,913
3,759,065	3,777,340	3,789,327	3,799,929
3,759,102	3,777,723	3,789,643	3,799,985
3,759,923	3,777,794	3,789,749	3,801,239
3,759,983	3,777,820	3,789,816	

Disclaimers

3,600,705.—*Wirojana Tantraporn* and *Se Puan Yu*, Schenectady, and *Paul J. Shaver*, Scotia, N.Y. HIGHLY EFFICIENT SUBCRITICALLY DOPED ELECTRON-TRANSFER EFFECT DEVICES. Patent dated Aug. 17, 1971. Disclaimer filed July 23, 1973, by the assignee, *General Electric Company*.

Hereby enters this disclaimer to claims 10, 11 and 21 of said patent.

3,787,270.—*James L. King*, Sudbury, Mass. SPLICING TAPE DISPENSER. Patent dated Jan. 22, 1974. Disclaimer filed Oct. 12, 1973, by the assignee, *King Instrument Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Aug. 21, 1990.

Service by Publication

Stephen Foris

In accordance with Rule 47 of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on August 4, 1971, of an application for patent entitled "Preservatives for Aqueous Systems," on behalf of Stephen Foris, whose last known address is 231 Lester Road, Toms River, New Jersey 08753. The application was made in compliance with Rule 47(a) and 35 U.S.C. 116 by joint inventor Milton Manowitz without execution by the said Stephen Foris. Notice of the filing directed to the above noted address has been returned undelivered.

An action to be taken by the said Shephen Foris in connection with the said application must be taken within thirty days of the publication of this notice.

WILLIAM FELDMAN,
Acting Assistant Commissioner for Patents.

National Technical Information Service

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Copies of Patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent 3,763,292. Manufacture of Bonded-Particle Nuclear Fuel Composites. Filed Oct. 1, 1971. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,763,374. Dynamic Multistation Photometer-Fluorometer. Filed Aug. 22, 1972. Patented Oct. 2, 1973. Not available NTIS.

Patent 3,764,469. Carbon-Silicon Coating Alloys for Improved Irradiation Stability. Filed Mar. 24, 1972. Patented Oct. 9, 1973. Not available NTIS.

DEPARTMENT OF THE AIR FORCE AF/JACP
Washington, D.C. 20314

Patent application 278,491. Method and System for Computing Altitude Over a Target and the Horizontal Range Thereof. Filed July 31, 1973. PC $4/MF $1.45.

Patent application 358,791. Microwave High Power Phase Shifter. Filed May 9, 1973. PC $4/MF $1.45.

Patent application 360,517. Method and Apparatus for Providing Higher Order Mode Compensation in Horn Antennas. Filed May 15, 1973. PC $4/MF $1.45.

Patent application 362,153. Dual Hologram Plate Holder. Filed May 21, 1973. PC $4.50/MF $1.45.

Patent application 366,837. Gated Detector Synchronization. Filed June 4, 1973. PC $4/MF $1.45.

Patent application 366,909. Demodulation System for Time Sharing Radiometer. Filed June 4, 1973. PC $4/MF $1.45.

Patent application 366,915. Special Purpose Computer to Implement Kronecker-Matrix Transformations. Filed June 4, 1973. PC $4.50/MF $1.45.

Patent application 369,035. Method for Growing Crystals. Filed June 11, 1973. PC $4/MF $1.45.

Patent application 374,829. Processing Conductive Tapes Into Self Supporting Balls. Filed June 29, 1973. PC $4/MF $1.45.

Patent application 375,239. Production of Cadmium Electrodes. Filed June 29, 1973. PC $4/MF $1.45.

Patent application 375,241. Particle Sampling Apparatus. Filed June 29, 1972. PC $4/MF $1.45.

Patent application 392,384. Portable Pantograph C-Scan Recording Flaw Detecting System. Filed Aug. 28, 1973. PC $4/MF $1.45.

Patent application 392,396. Pulse Generator. Filed Aug. 28, 1973. PC $4/MF $1.45.

Patent application 394,892. Chopper Transistor Driver and Feedback Circuit for Regulated DC to DC Power Converters Using Separate Input and Output Grounds. Filed Sept. 6, 1973. PC $4/MF $1.45.

Patent application 407,377. Combined Vertical and Lateral Identical Location of Accelerometer and Force System. Filed Oct. 17, 1973. PC $4/MF $1.45.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch
Federal Building, General Services Division, Agricultural Research Service, Hyattsville, Md. 20782

Patent application 275,988. Method and Composition for Preventing Deterioration of Hides From Freshly Slaughtered Animals. Filed July 28, 1972. PC $4/MF $1.45.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Building, Bethesda, Md. 20014

Patent application 271,051. Process of Viral Diagnosis and Reagent. Filed July 17, 1972. PC $6/MF $1.45.

Patent application 451,275. Method and Apparatus for Plating and Counting Aerobic Bacteria. Filed Mar. 14, 1974. PC $4/MF $1.45.

Patent 3,636,191. Vaccine Against Viral Hepatitis and Process. Filed Oct. 8, 1969. Patented Jan. 18, 1972. Not available NTIS.

Patent 3,799,355. Dialysis Membranes and Manufacture. Filed Dec. 28, 1970. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,799,356. Dialysis Hollow Fiber Membranes and Manufacture. Filed Dec. 28, 1970. Patented Mar. 26, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts. NW.
Washington, D.C. 20240

Patent 2,948,629. Impact-Resistant Ceramics From Synthetic Fluoramphiboles and Processes of Making Same. Filed June 14, 1958. Patented Aug. 9, 1960. Not available NTIS.

Patent 3,801,342. Manufacture of Lignite Binder Pitch. Filed Nov. 16, 1970. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,804,259. Filament Wound Reverse Osmosis Tubes. Filed Jan. 23, 1973. Patented Apr. 16, 1974. Not available NTIS.

Patent 3,806,564. Method of Chemically Modifying Asymmetric Membranes. Filed Jan. 26, 1972. Patented Apr. 23, 1974. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 401,920. Ultrasonically Bonded Valve Assembly. Filed Sept. 28, 1973. PC $4/MF $1.45.

Patent application 401,921. Prevention of Hydrogen Embrittlement of High Strength Steel. Filed Sept. 28, 1973. PC $4/MF $1.45.

Patent application 425,362. Fabrication of Polyphenylquinoxaline Composite Articles by Means of In Situ Polymerization of Monomers. Filed Dec. 17, 1973. PC $4/MF $1.45.

Patent application 446,564. Gas Chromatograph Injection System. Filed Feb. 27, 1974. PC $4/MF $1.45.

Patent application 448,321. Aromatic Polyimide Preparation. Filed Mar. 5, 1974. PC $4/MF $1.45.

Patent application 450,502. Fiber Separating and Cleaning Method and Apparatus. Filed Mar. 12, 1974. PC $4/MF $1.45.

Patent application 450,504. Method of Fluxless Brazing and Diffusion Bonding of Aluminum Containing Components. Filed Mar. 12, 1974. PC $4.25/MF $1.45.

Patent application 452,761. Controllable High Voltage Source Having Fast Settling Time. Filed Mar. 19, 1974. PC $4/MF $1.45.

Patent application 453,115. Multichannel Logarithmic RF Level Detector. Filed Mar. 21, 1974. PC $4/MF $1.45.

Patent application 455,163. Asynchronous, Multiplexing, Single Line Transmission and Recovery Data System. Filed Mar. 27, 1974. PC $4.25/MF $1.45.

Patent application 455,164., Electric Power Generation System Directly From Laser Power. Filed Mar. 27, 1974. PC $4/MF $1.45.

Patent application 457,295. Heat Operated Cryogenic Electrical Generator. Filed Apr. 1, 1974. PS $4/MF $1.45.

Patent application 458,484. A Panel for Selectively Absorbing Solar Thermal Energy and the Method for Manufacturing the Panel. Filed Apr. 5, 1974. PC $4.25/MF $1.45.

Patent application 459,736. Resonant Waveguide Stark Cell. Filed Apr. 10, 1974. PC $4/MF $1.45.

Patent 3,759,747. Method of Making Porous Conductive Supports for Electrodes. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,790,409. Storage Battery Comprising Negative Plates of a Wedge Shaped Configuration. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,795,910. Microwave Power Transmission System Wherein Level of Transmitted Power is Controlled by Reflections From Receiver. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,796,473. Reefing System. Patented Mar. 12, 1974. Not available NTIS.

Patent 3,799,813. Radiation Hardening of MOS Devices by Boron. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,224. Automatic Frequency Control for FM Transmitter. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,237. Gated Compressor, Distortionless Signal Limiter. Patented Mar. 26, 1974. Not available NTIS.

[FR Doc. 74–14330; Filed 6–25–74; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 22, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-2-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids, Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-11-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-15-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-23-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-21-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	11-14-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	1-22-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-1-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-23-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-10-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-15-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-2-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-16-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-2-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-10-73
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	8-28-73

Expiration of patents: The patents within the range of numbers indicated below expire during July 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,797,414 to 2,801,413, inclusive
Plant Patents..... Numbers 1,612 to 1,625, inclusive

REISSUES

JULY 16, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,074

YEAST LEAVENED BREAD DOUGH COMPOSITION AND PROCESS OF MANUFACTURE

Louis J. Smerak, Wayne, and Jason A. Miller, Dover, N.J., assignors to Caravan Products Co., Inc., Passaic, N.J.

No Drawing. Original No. 3,578,462, dated May 11, 1971, Ser. No. 881,609, Dec. 2, 1969, which is a continuation-in-part of application Ser. No. 566,212, July 19, 1966, now Patent No. 3,494,770. Application for reissue Apr. 30, 1973, Ser. No. 356,047

The portion of the term of the patent subsequent to Feb. 10, 1987, has been disclaimed

Int. Cl. A21d *2/02, 2/04, 8/04*
U.S. Cl. 426—20 **24 Claims**

A yeast leavened bread dough containing a composition consisting essentially of about 0.0005 to 0.010 part by weight per 100 parts of flour employed in the dough of an oxidizing agent, about 0.03 to 1.0 part by weight of calcium salt per 100 parts flour employed in the dough, and catalytically active quantities of enzyme selected from the class consisting of fungal amylase and fungal protease, wherein the fungal alpha amylase enzyme is sufficient to provide between *6,000* [3,000] and 150,000 SKB units for 100 pounds of flour employed in the dough and the fungal protease enzyme is sufficient to provide between 3,000 and 500,000 hemoglobin units for 100 pounds of flour employed in the dough.

28,075

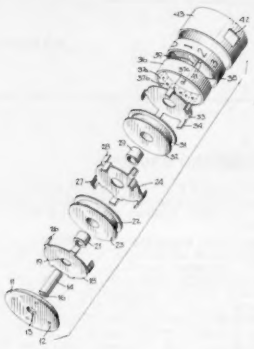
DOUBLE CLAW TOOTH STATOR SYNCHRONOUS AND STEPPING MOTOR WITH INDICATOR

Richard J. Kavanaugh, Bristol, Conn., assignor to North American Philips Corporation, New York, N.Y.

Original No. 3,508,091, dated Apr. 21, 1970, Ser. No. 693,617, Dec. 26, 1967, which is a continuation-in-part of abandoned application Ser. No. 402,830, Oct. 9, 1964. Application for reissue Oct. 19, 1972, Ser. No. 299,041

Int. Cl. H02k *37/00*
U.S. Cl. 310—49 **38 Claims**

A synchronous and stepping motor with two stator sections, each having a plurality of interleaved claw tooth stator poles energized by a stator coil so that alternate poles are of opposite polarity. The stator sections are arranged end-to-end along a common axis and the poles of each section are angularly spaced apart by commensurate amounts, the poles of one section being angularly displaced with respect to the poles in the other section. The rotor is permanently magnetized to have magnetic poles angularly spaced apart commensurately with the poles in the stator sections, and the coils are so energized as to produce out-of-phase magnetic fields to rotate the rotors. The phase displacement of the mangetic fields may result from applying out-of-phase alternating currents or properly timed current pulses to the coils of the two stator sections, or it may result from the shading effect of a conductive coil form in one stator section. An outer cylindrical shell with



indicia is provided on the rotor whereby the indicia may be viewed through an aperture in the cover.

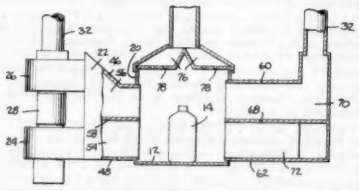
28,076

VAPOR DEPOSITION APPARATUS INCLUDING AIR MASK

Bengt O. Augustsson, Surte, Sweden, and Russell D. Southwick, Butler, Pa., assignors to Glass Container Manufacturers Institute, Inc., New York, N.Y.

Original No. 3,688,737, dated Sept. 5, 1972, Ser. No. 873,916, Nov. 4, 1969. Application for reissue Aug. 24, 1973, Ser. No. 391,036

Int. Cl. C23c *13/08*
U.S. Cl. 118—48 **4 Claims**



Vapor deposition means in combination with means to deliver an air stream adjacent to the vapor stream whereby to mask predetermined portions of a substrate. Separate exhaust means are opposed to the respective coating and masking streams. Means convey the substrate between the opposed delivery and exhaust means.

28,077

AUTOMATIC MEAT CUTTING MACHINE

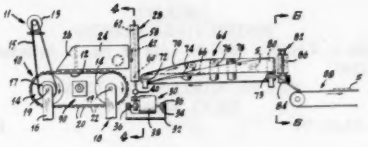
Morris Meltzer, 1350 Woodbourne, G–118, Levittown, Pa. 19057, and Donald D. Meyer, 2261 S. Hardwood Ave., Upper Darby, Pa. 19082

Original No. 3,631,908, dated Jan. 4, 1972, Ser. No. 41,472, May 28, 1970. Application for reissue Jan. 15, 1973, Ser. No. 323,819

Int. Cl. B26d 4/22

U.S. Cl. 83—101 **16 Claims**

An automatically operating machine receives pork loins, loins of beef, or other meat products, either boned or boneless, and cuts them into steaks, chops, or the like. Adjustments are provided in the machine such that the thickness of the slices is selectively regulated by varying the speed with which the product is fed to and through the cutting mechanism. The cut slices are conveyed to a cleaning brush assembly, being brought to a vertical position to be fed therethrough, and are thereafter discharged for packaging and final processing.



PATENTS

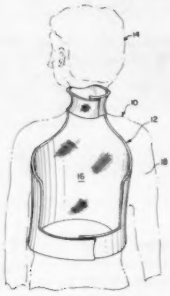
GRANTED JULY 16, 1974

GENERAL AND MECHANICAL

3,823,417
PROTECTIVE GARMENT

Bertha L. Cluckey, 5805 N. 16th St. No. 9, Arlington, Va. 22205

Filed Jan. 9, 1973, Ser. No. 322,248
Int. Cl. A41d *1/04*
U.S. Cl. 2—91 1 Claim

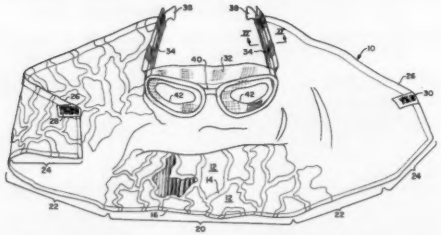


A protective garment for facilitating protection of the neck and chest of a user against cold weather and the like, wearable under an outer garment, which is easily donned or removed, and does not unduly interfere with appearance or function of other garments or the maneuverability of a user.

3,823,418
CAMOUFLAGE APPARATUS

Frank R. Piper, Delmont, Pa., assignor to Penn's Woods Products, Inc., Delmont, Pa.

Filed Jan. 18, 1973, Ser. No. 324,734
Int. Cl. A42b *1/18*
U.S. Cl. 2—206 8 Claims

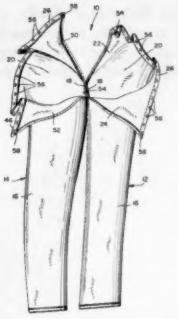


A camouflage apparatus to disguise the face and neck areas of hunters is disclosed in the form of a netting having areas or patches defined by various shades of the color green throughout the netting. The netting includes wing-like end portions which are connected together by a loop and pile clasp system at the back of the user's neck. Pockets sewn into the upper portion of the netting are arranged to receive ear lugs of eyeglasses by which the netting is at least partially supported. Openings in the netting are aligned with the lens area of the glasses. Additional netting material extends upwardly from the lug receiving pockets in the manner that a portion of the netting is used to camouflage the forehead and temple areas of the user's head.

3,823,419
ADJUSTABLE TROUSER-LIKE GARMENT

George J. Breitbart, 25 E. 9th St., New York, N.Y. 10003

Filed Feb. 9, 1973, Ser. No. 331,231
Int. Cl. A41d *1/06*
U.S. Cl. 2—227 8 Claims

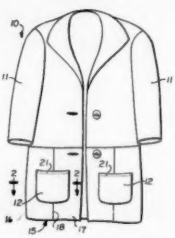


A trouser-like garment consists of two complementary half-sections. The half-sections are permanently joined only at their crotch portion. The parts of the half-sections include flap portions which are adjustably and releasably secured to each other in overlapping position at the front and rear of the waist portion of the garment.

3,823,420
PATCH POCKET CONSTRUCTION

Marcus Breier, Edson St., Amsterdam, N.Y. 12010

Filed May 24, 1973, Ser. No. 363,731
Int. Cl. A41d *27/20*
U.S. Cl. 2—247 9 Claims

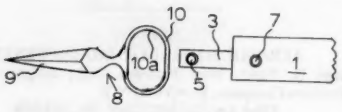


A construction for patch pockets permitting a reduction in the quantity of relatively costly garment materials required in production of a garment having patch pockets. The garment is formed with a slit extending into the area where the desired patch pocket is to be formed. The relatively costly garment material is cut away in the area underlying the patch pocket, and the patch pocket is positioned to overlie the cut away portion and secured to the garment along with a relatively inexpensive pocket backing material.

3,823,421
APPAREL BELT

Walter Wells Collins, Atlanta, Ga., assignor to Adventure Products, Inc., Atlanta, Ga.

Filed Aug. 18, 1972, Ser. No. 281,646
Int. Cl. A41f 9/00
U.S. Cl. 2—321 5 Claims

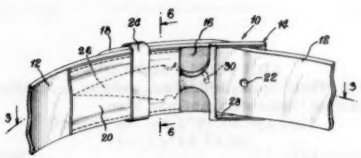


An apparel belt includes a flexible belt element which is adapted for disposition about the waist of the wearer and which is interconnected at its adjacent end portions by a combination implement and belt connecting device which is disjointably coupled with the adjacent ends of the belt element and which is readily disjointable from both ends of the belt element for use as an implement together with sheath means at one end of said belt element for receiving a part of said combination implement and belt connecting device.

3,823,422
APPAREL BELT AND BUCKLE THEREFOR

Valmore J. Forgett, Jr., Woodcliff Lake, N.J., assignor to Adventure Products Inc., Atlanta, Ga.

Filed Sept. 7, 1972, Ser. No. 287,064
Int. Cl. A41f 9/00
U.S. Cl. 2—321 10 Claims



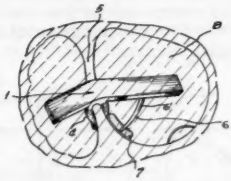
A belt having a buckle which may be removed readily and used as a knife. The blade of the knife is curved to conform to the shape of the body so that the belt is comfortable to wear. A pocket is formed in the belt to receive the knife blade to thereby prevent injury to the wearer.

3,823,423
ARTIFICIAL MALLEUS COLUMELLA FOR THE HUMAN EAR

Eduardo Carlos Campo Mercandino, Montevideo 606, Buenos Aires, Argentina

Filed Feb. 28, 1973, Ser. No. 336,854
Claims priority, application Argentina, June 13, 1972, 242511
Int. Cl. A61f 1/24
U.S. Cl. 3—1 4 Claims

This invention provides an artificial malleus columella for the human ear characterized by the fact that it is constituted by an elongated laminar part which has conformed in it an obtuse angle from the internal face of which an elastic fixation element is projected, said element having a contour similar to

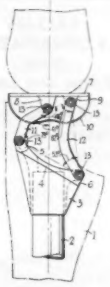


the bridge of the human ear; the end of a stem being fixed in one of the sides of the laminar part, while the other end of the stem rests in the stapes.

3,823,424
ARTIFICIAL LEG WITH STABLE LINK-TYPE KNEE JOINT

Denis Ronald William May, London, England, assignor to J. E. Hanger and Company Limited, London, England

Continuation-in-part of Ser. No. 229,318, Feb. 25, 1972, abandoned. This application Feb. 28, 1973, Ser. No. 336,759
Int. Cl. A61f 1/04, 1/08
U.S. Cl. 3—22 3 Claims



The invention provides an artificial knee joint comprised by two parts of links joining a stump socket portion to a shin portion in such a manner as to impart stability to the joint over initial flexure from the upright, such stability being derived from an initial rise in the effective center of rotation.

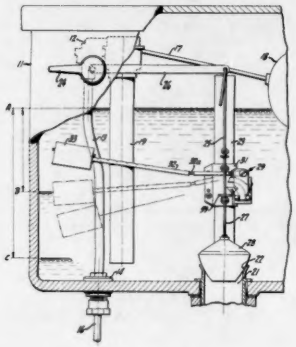
3,823,425
TOILET TANK DISCHARGE CONTROL FOR SELECTIVELY DISCHARGING VARIABLE AMOUNTS OF WATER

Rudleigh G. Coffman, 769 Tree Ln., El Cerrito, Calif. 94530

Filed May 7, 1973, Ser. No. 358,021
Int. Cl. E03d 1/33, 1/34; F16k 33/00
U.S. Cl. 4—53 20 Claims

A toilet tank assembly including a water reservoir with a water discharge opening communicating with a toilet and having a water level control inlet valve assembly communicating with a water source for supplying water to the water reservoir when the water level in the tank decreases. An operating handle is coupled through an actuating mechanism to a discharge valve assembly which includes a valve member adapted to seat on the discharge opening for closing same. When the operating handle is moved to a first position the discharge valve assembly is moved to a corresponding first position and retaining means are provided for retaining the discharge valve as-

sembly at the first position while a first selected amount of water is discharged from the water reservoir through the water discharge opening but releasing the discharge valve assembly when the water reservoir level has fallen a selected first



amount. When the operating handle is moved to a second position the discharge valve means is moved to a second position which allows a second selected amount of water greater than the first selected amount to be discharged through the discharge opening.

3,823,426

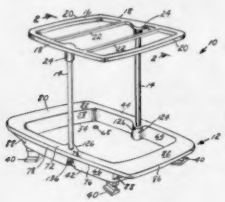
RAPID ASSEMBLY COMBINATION SANDBOX AND POOL

Walter Mitchko, 769 Bay Tree Ln., East Northport, N.Y. 94530

Continuation-in-part of Ser. No. 281,539, Aug. 17, 1972, abandoned. This application Oct. 18, 1972, Ser. No. 298,508

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172 **14 Claims**



An improved combination sandbox and pool which can be rapidly assembled or disassembled without the use of screws, nuts and bolts, or other fastening elements. The well of the unit has a drain hole, the well serving the dual purpose of a container of sand or water.

The leg members include a female socket with a wedged channel and oppositely aligned ball-shaped depressions. The male member has a mating wedge and ball-shaped protrusions. The male member is forced into the female member, the resiliency of the walls of the channel allowing the ball lock to provide sufficient stability for use conditions.

The upright sockets have an interior funnel-shaped wall with a lower cutout and a bottom step. Forcing an upright into the socket causes the wall to spread, creating a gripping force. The step limits the downward movement of the upright.

A modified embodiment of the upright includes a cross-sectional T-shaped member having the lower portion of the center leg being wedge-shaped and received within a mating female receptacle in the upright socket. The walls of the receptacle are slightly resilient and provide a gripping force to engage the upright.

The canopy frame may carry a channel on the end support either on the top or end surface, passing along the entire length of support. The canopy covering is positioned over the channel and a securement member which is T-shaped in cross-section is forced into the channel, the finger engaging the canopy covering, also forcing it into the channel.

3,823,427

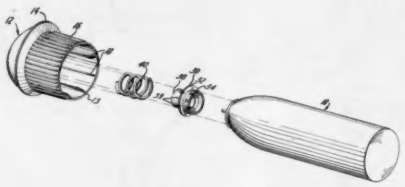
AEROSOL HYDRAULIC DRAIN OPENER

Gilbert H. Pittet, West Paterson, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,858

Int. Cl. B08b *5/00, 9/00;* **E03d** *11/00*

U.S. Cl. 4—255 **2 Claims**



Apparatus for clearing waste stoppage from conduits such as pipes and drains. The device employs the hydraulic ram principle wherein a column of water or other liquid is used as a flexible shaft between the aerosol drain opener and the stoppage or obstruction. The device employed is an aerosol can capable of withstanding at least 72 psig. at 70°F.

3,823,428

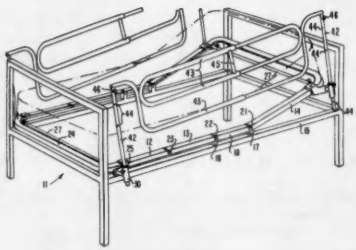
ADJUSTABLE BED RAILS

Albert J. Whyte, Springfield, Mass., assignor to Standard International Corporation, Andover, Mass.

Filed Apr. 13, 1972, Ser. No. 243,569

Int. Cl. A47c *21/08*

U.S. Cl. 5—331 **9 Claims**



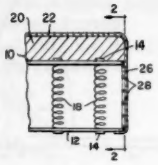
An adjustable bed rail readily adaptable for beds of any type. A tubular cross brace is mounted to either end of the bed frame and T-couplings are removably and rotatably mounted to the brace. The bed rail is, in turn, adjustably mounted to the couplings on either side of the bed.

3,823,429

FRAME SPACER

Jere B. Ambrose, Pontiac, Mich., assignor to Northern Fibre Products Company, Birmingham, Mich.

Filed Mar. 23, 1973, Ser. No. 344,246
Int. Cl. A47c *7/22, 7/14*
U.S. Cl. 5—345 R **2 Claims**



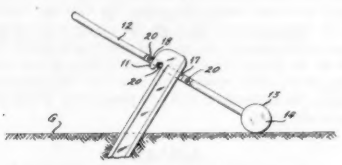
A box-spring type construction formed of an upper frame, a lower frame and interconnecting coil springs, which may be utilized in automobile seats and the like, and having a horizontally elongated netting secured to both the upper and lower frames at the front of the construction. The netting extends vertically between the frames to limit expansion of the springs. The netting is formed of a plurality of thin vertical strands which are joined by a plurality of thin horizontal strands with all the strands being in a first plane. Each strand is formed of a slippery, flexible material having limited resiliency which has been uniaxially stretch oriented in its longitudinal direction to increase tensile strength. The strands form a netting or lattice and the joints of the strands distribute any uneven tensile forces, resulting in an increased tension absorption.

3,823,430

TENT STAKE JACK

Ivan Eugene Welsh, II, Rutherford, and Ray Flow Heckman, Dyer, both of Tenn., assignors to Brown Group, Inc., St. Louis, Mo.

Filed Feb. 7, 1973, Ser. No. 330,450
Int. Cl. B25f *1/00*
U.S. Cl. 7—9 **5 Claims**



A tent stake tool for setting and pulling tent stakes in which the tool is a combination stake driving mallet and pulling lever, and in which the pulling lever is provided with stake engaging means and the mallet head may be either a fulcrum or handle.

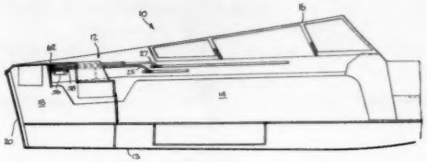
3,823,431

CONVERTIBLE TOP FOR BOATS AND THE LIKE

Lester Miller, Topeka, Ind., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Apr. 23, 1973, Ser. No. 353,290
Int. Cl. B63b *17/02*
U.S. Cl. 9—1 R **8 Claims**

The top includes a pair of inverted generally U-shaped main frame members pivoted at their lower ends to slides mounted along opposite sides of the boat for translational movement in a fore and aft direction. Each frame member carries an auxiliary generally U-shaped frame member, the auxiliary and main frame members upstanding from the boat in respective fore and aft directions and supporting along their upper ends a flexible convertible top. The stern portion of the boat pivotally mounts an engine housing cover. Below the cover is a ledge which extends transversely between opposite sides of the boat. To store the top, the auxiliary frames are folded onto the main frames and one or both main frames are longitudinally trans-



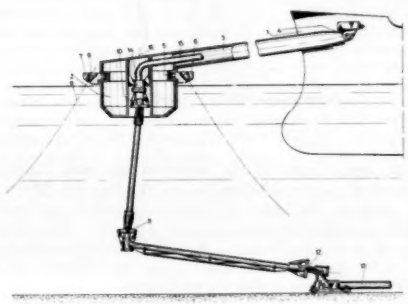
lated so that the frames lie next adjacent one another. With the stern cover pivoted up, the frames can be pivoted downwardly to lie in a generally horizontal plane and such that the folded flexible cover and base portions of the frames rest on the transversely extending ledge. The stern cover is then pivoted downwardly to overlie the ledge and close the engine compartment.

3,823,432

ROTATABLE BUOY FOR MOORING VESSELS

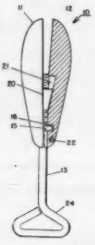
Willem Jan Van Heijst, Monte Carlo, Monaco, assignor to N.V. Industrieele Handelscombinatie, Rotterdam, Netherlands

Filed June 1, 1973, Ser. No. 366,243
Claims priority, application Netherlands, June 9, 1972, 7207903
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 P **3 Claims**



A buoy for mooring vessels such as tankers is encircled by a relatively rotatable ring to which are secured a plurality of anchor chains so that the buoy can rotate about a vertical axis within and relative to the ring. At least one coupling member in the form of a rigid arm is integrally and rigidly secured to the buoy for rotation therewith. The end of the arm remote from the buoy is secured to the moored vessel for relative vertical swinging movement about a horizontal pin. A pipeline on the ocean floor enters the buoy and passes through the arm to the moored vessel.

3,823,433
SPREADER FOR SHOE STRETCHER
Robert C. Smith, Camden, N.Y., assignor to Rochester Shoe Tree Company, Inc., Rochester, N.Y.
Filed Apr. 26, 1973, Ser. No. 354,476
Int. Cl. A43d *5/00*
U.S. Cl. 12—117.2 **4 Claims**



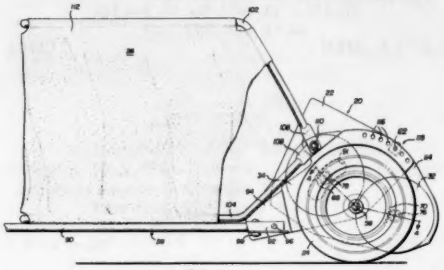
The inventive spreader applies to a shoe stretcher having a pair of forms that are spreadaable by turning a shaft extending between the forms. The spreader includes an anchorage locked between the forms, a boss on the shaft on each side of the anchorage, a cam threaded on the shaft to move axially of the shaft, and cam follower slots in the forms to hold the cam from rotating and tapered relative to the cam to spread the forms as the cam moves axially of the shaft.

3,823,434
SHOE WARMER
Benno Krell, Zeil 115, 6 Frankfurt am Main, Germany
Filed Apr. 23, 1973, Ser. No. 353,912
Int. Cl. A43d *3/00*
U.S. Cl. 12—129.4 **3 Claims**

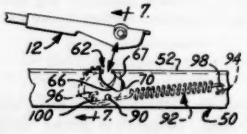
The embodiment of the invention disclosed herein is directed to a ski boot heater for insertion into the interior of the ski boot. The heater is formed of a hollow, collapsible elastic container adapted to receive a quantity of hot liquid through an opening formed in the top portion of the container. When the ski boot heater is not in use, the container can be rolled up to occupy a relatively small space.

3,823,435
SWEEPER ASSEMBLY
Keith H. Rhodes, and William J. Schlapman, both of Winnesconne, Wis., assignors to J. I. Case Company, Racine, Wis.
Filed Apr. 16, 1973, Ser. No. 351,396
Int. Cl. E01h *1/04*
U.S. Cl. 15—79 **16 Claims**

This disclosure relates to a positive drive sweeper, such as a lawn sweeper, which permits elevation of the ground sweeping brush without disturbing the load in the hopper. The positive drive includes internal and external planetary bears within the wheel hub which drive the two brushes of the sweeper in opposite directions. The housing is pivotally mounted on the ground engaging wheel axis and the brushes are rotatably connected to the housing, whereby the ground sweeping brush may be raised for hauling by pivoting the housing about the wheel axis, without disturbing the load in the hopper.

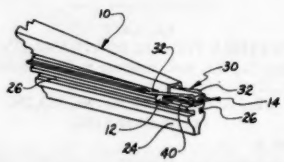


3,823,436
WIPER BLADE MOUNT
Harry W. Roberts, Merrick, N.Y., assignor to Pylon Manufacturing Corporation, Ft. Lauderdale, Fla.
Filed Mar. 21, 1973, Ser. No. 343,496
Int. Cl. B60s *1/40*
U.S. Cl. 15—250.32 **10 Claims**



A mount for coupling a wiper blade to a movable arm of a windshield wiper system. The mount includes a yoke that is fitted with a slot which makes an acute angle with the upper edge of the yoke. A carriage having two lip members is rotatably mounted inside the yoke. The carriage receives the pin in an open position through the upper edge of the yoke and moves the pin into an inserted position in which the pin is locked in the yoke. An over-center biasing spring biases the carriage in the open position for enabling insertion of the pin and biases the carriage in a closed position in which the pin is locked to the yoke.

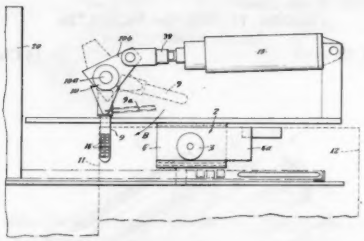
3,823,437
WINDSHIELD WIPER BLADE ASSEMBLY
Gary F. Hauke, New Albany, Ohio, assignor to Perma-Blade, Inc., Columbus, Ohio
Filed Aug. 4, 1972, Ser. No. 277,923
Int. Cl. B60s *1/04*
U.S. Cl. 15—250.42 **1 Claim**



An improved windshield wiper blade assembly characterized by a novel blade holder and flexible wiper blade as-

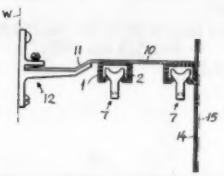
sembly which is removably mounted on the main frame means attached to the wiper element. The assembly is further characterized by a retaining means for removably mounting the flexible wiper blade in the blade holder.

3,823,438
APPARATUS FOR HANDLING SACKS
Geoffrey Terence Webber, and James Henry Winchester Thorne, both of Bristol, England, assignors to Whitehall Machinery Limited, Bristol, England
Filed Feb. 3, 1972, Ser. No. 223,248
Int. Cl. A47l *5/34*
U.S. Cl. 15—304 **8 Claims**



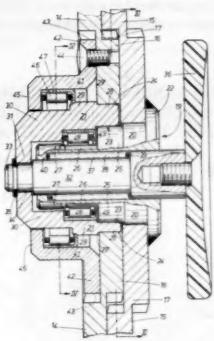
Apparatus for cleaning the inner surfaces of mouth portions of sacks prior to closure, e.g., by heat sealing, has suction means to engage the two lips of the mouth portion to part them, and a finger having suction cleaning means on opposite sides which is inserted between the parted lips. The finger and sack are then relatively traversed so that the finger scans a band along each of the said inner surfaces. The means to part the lips may be vacuum heads and there may be a bellows-construction in the vacuum linkage which contracts when the head is applied to the mouth portion, thereby withdrawing the head and causing the lips to part.

3,823,439
APPARATUS FOR SLIDABLY SUPPORTING CURTAINS AND THE LIKE
Rolf Selset, Kongleveien 5, Skedsmokorset, Norway
Filed July 13, 1970, Ser. No. 54,127
Int. Cl. A47h *1/04*; **E05d** *13/02*
U.S. Cl. 16—94 D **6 Claims**



Slide members for supporting a curtain are mounted for slidable movement in a support constituted of inner and outer telescopic members having aligned slots through which pass depending stems of the slide members. Each of the sides of the slots are formed by coplanar edges of the telescopic members and the planes of the opposite sides are inclined to one another and converge downwardly and outside the telescopic members. The inclined edges can be formed by bending portions of the telescopic members at the slots inwardly. The slide members have inclined side surfaces which ride on the edges of the slot.

3,823,440
HINGE FITTING FOR SEATS WITH ADJUSTABLE BACKREST, ESPECIALLY AUTOMOTIVE VEHICLE SEATS
Gerd Klingelhofer, Remscheid, Germany, assignor to Fritz Keiper, Remscheid-Hasten, Germany
Filed June 6, 1973, Ser. No. 367,423
Claims priority, application Germany, June 7, 1972, 2227680
Int. Cl. E05d *11/10*
U.S. Cl. 16—139 **18 Claims**

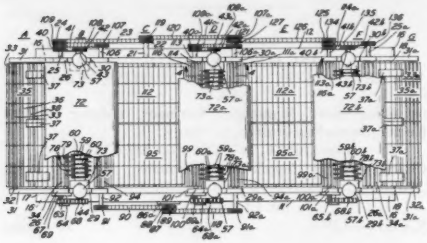


A hinge fitting for a seat, especially a motor vehicle seat, having a backrest pivotally adjustable with respect to the seat portion, in which adjusting means connect a hinge member fixed to the backrest and another hinge member fixed to the seat portion for pivotal movement with respect to each other. The adjusting means comprise an internally toothed ring gear connected to one of the hinge members, a spur gear meshing with the ring gear and connected to the other of said hinge members and having an outer diameter smaller by at least the height of one tooth than the root diameter of the gear ring, eccentric means including a pin fixed to one of the gears and an eccentric bysing cooperating with the other of the gears and mounted on the pin turnable and axially movable with respect thereto, and means connected to the bushing for moving the same in axial direction between a first position in which the bushing substantially prevents turning of the other gear relative to the pin and therewith to the one gear fixed to the pin, and a second position in which the bushing can turn freely with respect to the pin and permits turning of the gears relative to each other.

3,823,441
MEAT TENDERIZER
Edward W. Bridge, Jr., c/o Bridge Machine Co., Inc. Kennedy St., Palmyra, N.J. 08065
Filed May 18, 1973, Ser. No. 361,547
Int. Cl. A22c *9/00*
U.S. Cl. 17—26 **12 Claims**

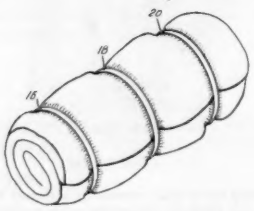
Meat tenderizer apparatus is provided in which a flat piece of meat to be tenderized is fed between a set of cutter rollers, rotated in flat condition through a predetermined angle, passed between a second set of cutter rollers, rotated in flat

condition through a predetermined angle, passed between a third set of cutter rollers and delivered for use with each set of



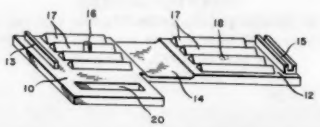
cutter rollers cutting or breaking the meat fibers and being adjustable to accomodate different thicknesses of cutlets.

3,823,442
EASY-ON BANDS FOR ROLLED MEATS
Rose S. Ferrara, 180 Christie St., Leonia, N.J. 07605
Filed Jan. 29, 1973, Ser. No. 327,600
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 R **1 Claim**



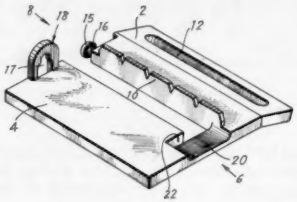
This invention pertains to an improved means to hold rolled meats and rolled stuffed meats in a rolled shape for sale, cooking and subsequent slicing. It comprises an elastic band of a substance which will retain its full elasticity when exposed to oven temperatures up to 600° F or frying temperatures and a covering for said band comprised of standard butcher's thread. These thread covered bands, which come in various sizes, are stretched and placed over the rolled meat or rolled stuffed meat in place of conventional fastening means. These bands may be rinsed or washed and reused.

3,823,443
PLASTIC CLASP MEANS
Teruo Takabayashi, Kyoto, Japan, assignor to Kohshoh Limited, Kyoto, Japan
Filed Mar. 2, 1973, Ser. No. 337,691
Claims priority, application Japan, Oct. 11, 1972, 47-117448
Int. Cl. A44b *11/20, 21/00*
U.S. Cl. 24—186 **3 Claims**



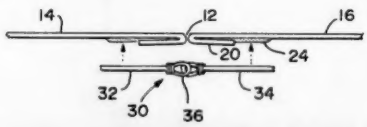
The present invention relates to a plastic clasp means comprising a first plate member, a second plate member, a bendable hinge member interconnecting said plate members and governing the opening and closing thereof, and a fitting means consisting of at least a couple of male and female fitting elements, said male fitting element being provided on a required position of said first plate member and said female fitting element being provided in said second plate member at a position corresponding to said position of the male fitting element, whereby when said first and second plate members are in the state of "closed," said male fitting element is fitted in said female fitting element.

3,823,444
PLASTIC BUCKLE OR ADJUSTER
Teruo Takabayashi, Kyoto, Japan, assignor to Kohskoh Limited, Kyoto, Japan
Filed Mar. 13, 1973, Ser. No. 340,726
Int. Cl. A44b *11/12*
U.S. Cl. 24—191 **16 Claims**



In a plastic buckle or adjuster comprising first and second plate members, one of said plate members being provided with a clamp means and a slot, each of hinge means for opening and closing said plate members comprising a laterally projecting journal provided with a generally circular stopper head of a larger diameter than that of said journal and a bearing provided with a bearing hole which is adapted to engage with said journal, and said journal being adapted to fit in the corresponding bearing.

3,823,445
ADHESIVE SLIDE FASTENER INSTALLATION
Anna Belle Rivers, Garden City, N.Y., assignor to Textron Inc., Providence, R.I.
Filed July 18, 1972, Ser. No. 272,998
Int. Cl. A44b *19/00*
U.S. Cl. 24—205.1 R **7 Claims**



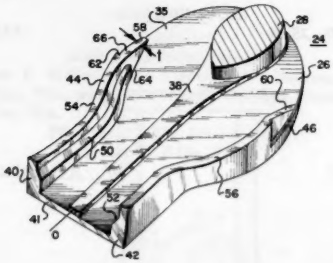
A slide fastener installation wherein a pair of fabric sections each has a folded portion and a slide fastener has a pair of carrier tapes, is completed by adhesively bonding each folded portion to its fabric section and each carrier tape to its corresponding folded portion.

3,823,446

COIL FASTENER SLIDER HAVING LOCKING RIDGE

Karl W. Labecki, Bayside, N.Y., assignor to Coats & Clark, Inc., New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,306
Int. Cl. A44b 19/30
U.S. Cl. 24—205.14 R 9 Claims



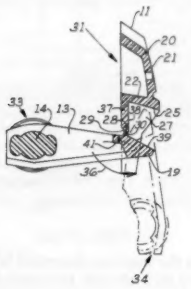
A slider for a coil fastener formed by helically wound plastic strips having control walls formed partway along the sides of the slider to guide the strips. At a termination area of the end of each control wall a locking ridge is formed as an integral part of the slider. Each locking ridge has an inclined surface corresponding to the helical pitch of the strips and a thickness such that when the strips are pulled apart in an extreme disengaging position, the locking ridge will engage between adjacent coils and prevent further movement of the slider.

3,823,447

INTEGRAL CASKET HANDLE AND BASE WITH CONCEALED HINGE

Bennie R. Johnson, R. R. 3, Connersville, Ind. 47331

Division of Ser. No. 102,611, Dec. 30, 1970, Pat. No. 3,698,037. This application May 11, 1972, Ser. No. 252,365
Int. Cl. A61g 17/04
U.S. Cl. 27—2 8 Claims



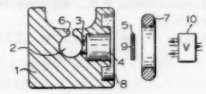
A casket handle integrally connected to a base by means of a concealed hinge. A flexible wall having laterally extending grooves on either side of the wall is integrally connected to a base securable to a casket. The flexible wall is also integrally connected to a second wall having arms and a carrying bar integrally attached thereto. A curved lip extends outward and downward from the base cooperatively with the second wall concealing the flexible wall when the carrying bar and arm are pivoted forward of the base.

3,823,448

MULTI-PURPOSE FLUID YARN TREATING APPARATUS

John D. Roberts, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,611
Int. Cl. D02g 1/16
U.S. Cl. 28—1.4 3 Claims



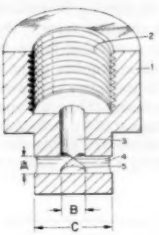
A multi-purpose fluid yarn treating apparatus and process, the apparatus having a yarn processing bore and at least one fluid entry port having a recess designed to accommodate any one of a plurality of inserts. The inserts have the ability to change the direction, diameter, number and cross-section of fluid entry orifices.

3,823,449

APPARATUS FOR INTERLACING YARNS

Ernest J. Griset, Jr., Asheville, N.C., assignor to Akzona Inc., Asheville, N.C.

Filed Dec. 27, 1971, Ser. No. 211,997
Int. Cl. D02g 1/16
U.S. Cl. 28—1.4 9 Claims



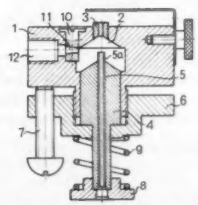
Various embodiments of apparatus for interlacing yarn are disclosed wherein use is made of indentations or "dimples" in the yarn channel to create a turbulent reaction, thereby enhancing the turbulent action. Methods of use of the apparatus are also disclosed.

3,823,450

TEXTURING JET

Waclaw Ankudowicz, ul. Zwirki 8 m.7; Stanislaw Karol Kurzyniec, ul. Lutomierska 69 m.26, and Tadeusz Jozef Biegasik, ul. Wolborska 1 m.66, all of Lodz, Poland

Filed Apr. 6, 1973, Ser. No. 348,718
Int. Cl. D02g 1/16
U.S. Cl. 28—1.4 7 Claims



A texturing jet designed for yarns being textured by a pneumatic operation in which the jet is self-chargeable with yarn by moving a bolt relative to a texturing chamber. The chamber

includes a variable control pin through which a jet of air is conveyed to the texturing chamber to permit processing yarns made of various raw materials and having different twist orientations so as to obtain any desired texturing effect.

3,823,451

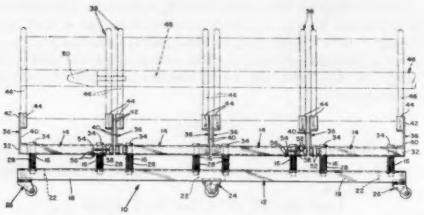
BEAM SHAFTING APPARATUS

Harold E. Faille, Greensboro, N.C., assignor to Guilford Mills, Inc., Greensboro, N.C.

Filed Jan. 15, 1973, Ser. No. 323,875

Int. Cl. D03j *1/00*

U.S. Cl. 28—41 **12 Claims**



An apparatus for facilitating the positioning of a plurality of yarn beams upon a common support shaft having a tapered nose cone includes a wheeled frame having a plurality of beam-supporting sub-assemblies mounted thereon for displacement relative to the frame and relative to each other for axially aligning yarn beams supported upon the sub-assemblies for receiving the support shaft. Adjacent sub-assemblies may be interlocked for displacement together as a unit when supporting a beam having a length greater than a single sub-assembly.

3,823,452

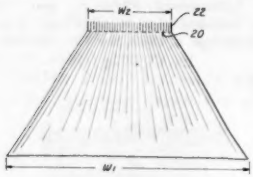
METHOD OF FORMING PLEATED FABRIC

Layton Bruce Harrow, 306 W. 100th St., New York, N.Y. 10025

Filed Dec. 13, 1972, Ser. No. 314,780

Int. Cl. D06c *23/04*

U.S. Cl. 28—72 FT **11 Claims**



A method of making a pleated decorative fabric in which a length of light and relatively sheer fabric woven from natural fiber yarns first is shirred adjacent to one end thereof in the direction of the fabric weft to reduce the fabric width by a factor of about one third, then is treated to remove the yarn size as by washing in a detergent and rinsing, then is wrung around an axis extending in the direction of the fabric warp and finally is dried to produce the desired pleated fabric.

3,823,453

METHOD OF MANUFACTURING AN INDIRECTLY HEATED CATHODE AND CATHODE MANUFACTURED ACCORDING TO THIS METHOD

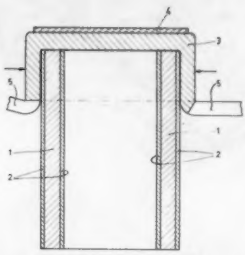
Antonius Johannes Alberta Van Stratum, and Theodorus Hendrikus Weekers, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,347

Claims priority, application Netherlands, Dec. 16, 1971, 7117226

Int. Cl. H01j *9/00*

U.S. Cl. 29—25.14 **4 Claims**



A cathode cap is welded to a metal cylinder over a black sintered metal layer which contains from 60 to 10 percent by weight of metal oxide and which covers the whole cylinder.

3,823,454

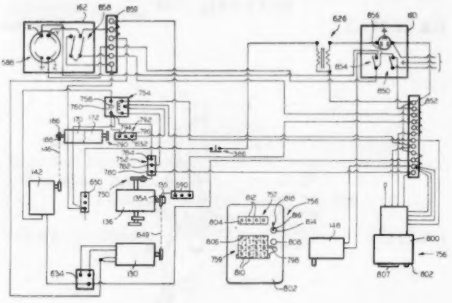
MACHINE FOR PROCESSING FLEXIBLE METALLIC CONDUIT

William J. Fisher, Lisle, Ill., assignor to Maynard Braverman, Chicago, Ill., a part interest

Filed May 24, 1973, Ser. No. 363,347

Int. Cl. B23p *21/00*

U.S. Cl. 29—33 K **4 Claims**



Improvements in the machine described in the applicant's U.S. Pat. No. 3,672,015 wherein the conduit roller feeding drive of the machine includes a reset counter arrangement in which the idler roller of the drive operates a toothed rotary cam cooperating with a microswitch follower to send counting pulses to a reset counter that shows the amount of the conduit length to be fed, and that is being fed, through the machine, with the counter providing a visual showing of the footage involved for the conduit, length being formed and automatically is reset to zero after each set of conduit lengths is formed showing the correct instantaneous running footage of the next set of conduit lengths being processed by the machine. The functioning of the roller drive is controlled by a constant

speed cam arrangement operating a second microswitch to start the feeding action, with the counter shutting off the roller drive, and resetting itself when the desired conduit length has been fed through the machine. When, for reasons of roller slippage or the like, the desired conduit length is not fed through the machine during its normal cycle, the cam arrangement involved shuts off the roller drive independently of the counter, and the counter resets itself to again show zero running footage.

3,823,455

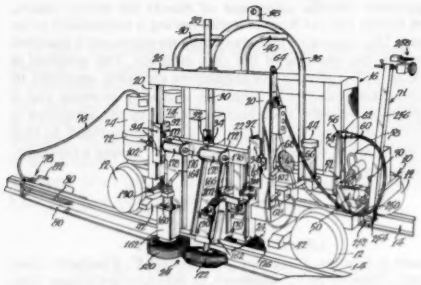
RAIL POLISHING MACHINE

William P. McIlrath, and Frederick W. Holstein, both of Racine, Wis., assignors to Racine Railroad Products, Inc., Racine, Wis.

Filed Nov. 9, 1972, Ser. No. 305,153

Int. Cl. B23p *23/04*

U.S. Cl. 29—33 R **10 Claims**



Apparatus for preparing the junction of two rails on a railroad right-of-way for application of a bonded rail joint or a welded joint. The apparatus includes a frame mounting flanged wheels for movement along a railroad right-of-way and a vertically movable carrier mounting opposed pairs of rotary abrading devices which are adapted to abrade and clean the underside of the head of the rail, the web and the upper surface of the foot of the rail. A vehicle defined by the frame also includes a source of bottled gas for fueling a burner customarily used in the process of applying bonded rail joints as well as an auxiliary abrading device for use in deburring rail ends, etc.

3,823,456

METHOD OF MANUFACTURING A ROLLER

Siegfried Schneider, Durrnhaar; Kurt Thate, Munich; Erwin Geyken, Munich; Horst Kempe, Munich, and Stephen Macher, Munich, all of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed July 2, 1973, Ser. No. 375,850

Claims priority, application Germany, July 1, 1972, 2232424

Int. Cl. B21h *1/14*

U.S. Cl. 29—148.4 D **11 Claims**

A method of making a roller which is to be used in apparatus for wet treatment of photographic material and which comprises a hollow metallic core and two inserts with coupling shafts provided therein. A coat of chemically resistant thermoplastic material is applied around and sealingly surrounds the core to protect it from the corrosive action of media used in the wet treatment process. The outer surface of the thus coated roller is thereupon machined to a high-quality finish.

3,823,457

METHOD OF FABRICATING A HEAT EXCHANGER HAVING TWO SEPARATE PASSAGEWAYS THEREIN

Frans Adrianus Staas; Jan Leedert Melse; Johannes Van Esdonk; Adrianus Petrus Severijns, and Adrianus Pieter Van De Mosselaer, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 5, 1973, Ser. No. 337,953

Claims priority, application Netherlands, Mar. 11, 1972, 7203268

Int. Cl. B21d *53/02*; **B23p** *15/26*

U.S. Cl. 29—157.3 D **5 Claims**

A method of manufacturing a heat exchanger for exchanging heat between helium flows in a temperature range below 2K, comprising two end plates having inlet and outlet apertures, and a stack of very thin foils arranged between the end plates with passageways that extend transverse to the planes of the foils and separate ducts in the planes of the foils which communicate with the passageways. During manufacture the foils are attached with supports provided between foils, which supports are removed by means of a rinsing liquid after the foils have been soldered to each other.

3,823,458

METHOD OF MANUFACTURING A SPIRALLY WOUND HEAT EXCHANGER

Etienne Jouet, 19 Rue du Panorama, 95 Montigny-Les-Cormeilles, and Pascal Rebuffe, 18 Rue des Sevres, Boulonge-Billancourt, both of France

Continuation-in-part of Ser. No. 290,518, Sept. 20, 1972, which is a division of Ser. No. 888,591, Dec. 29, 1969, Pat. No. 3,705,618. This application July 24, 1973, Ser. No. 382,183

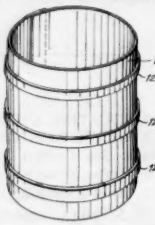
Claims priority, application France, Dec. 27, 1968, 68.181215; June 20, 1969, 69.20823; July 8, 1969, 69.23092

Int. Cl. B21d *53/02*; **B23p** *15/26*

U.S. Cl. 29—157.3 R **5 Claims**

A method of manufacturing a heat exchanger of the type having two cylindrical chambers wound in self-enclosing spirals, including enveloping the chambers by an outer jacket,

encompassing the chambers and jacket with binding strips, encasing the thus formed assembly by a hoop, positioning a



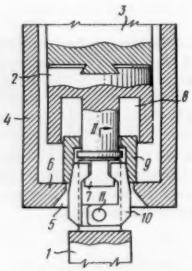
lower joint about the jacket, and pouring a moldable packing substance in the annular space between the jacket and inner wall of the hoop.

3,823,459

MECHANISM FOR THE CONNECTION OF A DUMMY BAR WITH ITS HEAD

Nikolai Vladimirovich Molochnikov, Prospekt Mira, 103, kv. 227; Abram Khaimovich Charny, Izmailovsky bulvar, 46/30, kv. 6, and Vladimir Alexandrovich Prokhorov, Kuskovskaya ulitsa, 67, korpus 4, kv. 54, all of Moscow, U.S.S.R.

Filed Apr. 30, 1973, Ser. No. 355,965
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 R **1 Claim**



A mechanism for the connection of a dummy bar with its head is intended for continuous metal casting machines having a basket with an opening in its bottom part for the reception of a cut ingot, said opening being sufficient for the passage of the dummy bar.

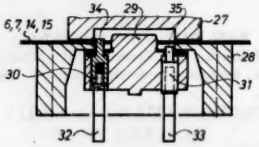
The mechanism for gripping a shank of the dummy bar head has grippers secured on the upper face of said dummy bar and made with chamfers on their upper portion of the outer side surface; besides, there is a ring with a taper portion on the lower part of the inner side surface, which matches the chamfers of the grippers, said ring being set on the abovementioned portion of the outer side surface, while the dummy bar head is provided with a circular groove on the lower face portion, the sizes of said groove corresponding to the sizes of said ring fitting into the groove.

3,823,460

APPARATUS FOR THE ALIGNMENT OF BLANKS FOR MOTOR PLATES

Ewald Bergmann, Goppingen, Germany, assignor to L. Schuler GmbH, Goppingen, Germany

Division of Ser. No. 75,453, Sept. 25, 1970, abandoned. This application Dec. 13, 1972, Ser. No. 314,529
Int. Cl. H05k *13/00*; **H02k** *15/00*
U.S. Cl. 29—203 L **11 Claims**



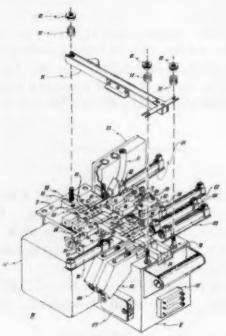
Apparatus for the alignment of blanks for motor plates, which blanks are cut from material having a trapezoidal cross section. The apparatus includes a ring member and a mandrel located in the opening of the ring member. The mandrel is provided with a plurality of registering elements operative in an alternating manner between an operating position and a rest position whereby each blank received by the apparatus is rotated in its plane with respect to a preceding blank so that the blanks, when superimposed, for a stack having a rectangular cross section.

3,823,461

TRANSPORT ASSEMBLY

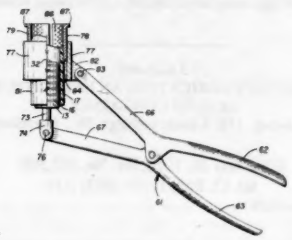
Howard J. Squires, Rochester, and Donald C. Rimlinger, Holcomb, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Division of Ser. No. 366,938, June 4, 1973. This application Nov. 16, 1973, Ser. No. 416,538
Int. Cl. H01r *43/00*
U.S. Cl. 29—203 P **6 Claims**



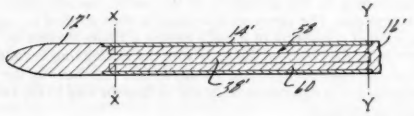
A reed switch analyzer for testing the mechanical and electrical characteristics of reed switches employs a unique transport assembly in a test head for advancing the reed switches through various test stations and timer means for synchronizing the operation of the test head with the reed switch manufacturing machine so that the test head is compact and is easily and conveniently added to or removed from the manufacturing machine without interfering with its operation. The test head provides test result signals for separating good switches from the bad ones and for providing feedback information to the machine operator for quality control purposes as the switches are automatically received from the manufacturing machine.

3,823,462
EXTRACTOR TOOL
Masami Kanda, 1515 W. 48th Ave., Denver, Colo. 80221
Filed Sept. 11, 1972, Ser. No. 287,949
Int. Cl. B23p 19/02
U.S. Cl. 29—268 3 Claims



A tool to facilitate the extraction of the broken components of a sprinkler system from the interior of conduit pieces used and/or to facilitate the disassembly of such sprinkler systems. The conduit is held while an element exerts a leverage derived force against the sprinkler system component whereby the conduit and component are moved reciprocally apart. Knurled or toothed surfaces are provided on element engaging faces for the efficient transmission of the leverage forces derived from plier or screw elements.

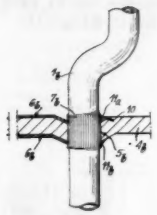
3,823,463
METAL POWDER EXTRUSION PROCESS
Don M. Weaver, Birmingham; Steven H. Reichman, and Buddy W. Castledine, both of Ann Arbor, all of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.
Filed July 13, 1972, Ser. No. 271,544
Int. Cl. B22f 3/24
U.S. Cl. 29—417 4 Claims



A ductile extrusion container and a process for consolidating metal powder into a dense mass which incorporates one or a plurality of longitudinally extending core elements of a different material embedded therein. The core elements are subsequently removed, such as by machining or leaching, producing a billet having one or a plurality of elongated apertures at preselected locations therethrough.

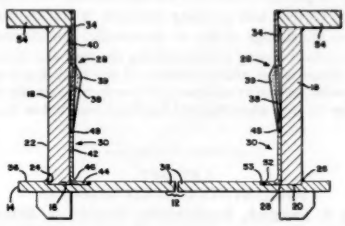
3,823,464
METHOD OF SECURING TOGETHER TWO ALUMINUM CONTAINING PARTS
Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France
Continuation-in-part of Ser. No. 93,823, Nov. 30, 1970, abandoned. This application Mar. 19, 1973, Ser. No. 342,357
Claims priority, application France, Dec. 1, 1969, 69.41380
Int. Cl. B23k 31/02
U.S. Cl. 29—470.5 6 Claims

A method of securing two aluminum parts, one within the other, comprising deforming the material of one part in the area to be secured to the other part to create groove spaced protrusions extending beyond the normal boundary of the engaging area of the other part, pressing said parts together to engage said protrusions with the boundary of the other part with sufficient friction to retain said parts in position, and then



submitting said engaged parts to brazing operation, the protrusions being partly compressed and deformed into the grooves so as to provide passages permitting flow, by capillary action, of liquid brazing alloy thereto.

3,823,465
METHOD OF CONSTRUCTING A COMPOSITE FORM WITH LINER PLATES
Theodore W. Shoe, Fletcher, and Robert E. Smith, Kettering, both of Ohio, assignors to The Flexicore Co., Inc., Dayton, Ohio
Division of Ser. No. 207,189, Dec. 13, 1971, Pat. No. 3,750,998. This application Apr. 2, 1973, Ser. No. 347,151
Int. Cl. B23k 31/02
U.S. Cl. 29—471.3 7 Claims



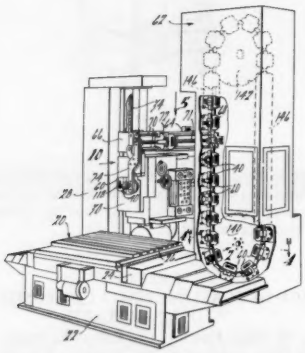
A composite slab casting form particularly adapted to resist the transverse deflection forces generated by the weight of concrete in the form. The base or pan of the form is constructed from a relatively thick, flat, plate member having a pair of longitudinally extending notches machined in its upper surface. A pair of relatively thin liner plates are bent about longitudinally extending axes to form base leg portions and side leg portions joined by a smoothly curved connecting section. The liner plates are mounted on the pan with the base leg portions thereof received in the notches. Longitudinally extending voids are defined by the inner ends of the base leg portions and opposing portions of the notches in the pan and these voids are filled with a welding material, which is thereafter ground to provide a smooth flat surface coplanar with the upper surface of the pan and the adjoining surface of the liner plate. In bending the liner plates to provide the base and side leg portions the base leg portions are formed long enough to space the above mentioned welding material far enough away from the connecting section that the welding material can be readily ground with conventional tools without gouging, undercutting or otherwise blemishing the surfaces of the form.

3,823,466

MACHINE TOOL WITH AUTOMATIC TOOL CHANGING MECHANISM

Richard A. Jerue, Birmingham, Mich., assignor to Devlieg Machine Company, Royal Oak, Mich.

Division of Ser. No. 30,630, April 22, 1970, Pat. No. 3,689,988. This application Apr. 11, 1972, Ser. No. 242,927
Int. Cl. B23q 3/157
U.S. Cl. 29—568 6 Claims



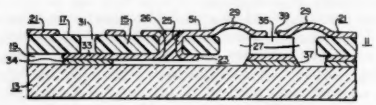
An automatic tool changing machine tool in which tools are selected from a tool storage device and transported to a position adjacent the drive spindle of the machine. From this position, a selected tool is inserted automatically in the drive spindle of the machine when it is ready to be used. The tools are coupled to pallets or carriers having handles which are engaged by various tool gripping elements in transporting the tool from the storage device to the spindle. The carriers also serve to mount coding for identifying the tool and conveying certain dimensional characteristics of the tool. Each carrier remains with its tool at all times and is only rotationally uncoupled from its tool after the tool has been inserted in the drive spindle.

3,823,467

SOLID-STATE CIRCUIT MODULE

Maurice B. Shamash, Randallstown; Stephen G. Konsowski, Glen Burnie; Frank A. Lindberg, Baltimore, and Seymour J. Ponemone, Randallstown, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 7, 1972, Ser. No. 269,689
Int. Cl. B01j 17/00
U.S. Cl. 29—580 9 Claims



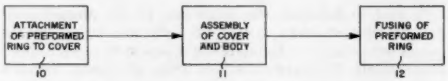
There is disclosed a solid-state circuit module with the integrated circuits, regardless of what type, mounted back-down on a substrate to improve cooling of the active surfaces. A method of making such a module is also disclosed. The integrated circuits are positioned in openings or windows in a sheet of polyimide having, formed on its surface by printed circuit techniques, appropriate patterns of conductor sections or strips or lines with certain strips extending cantilever-like from one surface of the sheet over the openings. The terminals of the integrated circuits are connected, typically by ultrasonic bonding, to the ends of the centilever-like strips. The sheet unit thus formed is mounted on, and its strips are appropriately connected to, a sukstrate, typically of alumina. The sheet is formed with pads which are diffusion bonded to the substrate, typically by bonding to metal, typically gold. The backs of the integrated circuits are likewise bonded to the substrate.

3,823,468

METHOD OF FABRICATING AN HERMETICALLY SEALED CONTAINER

Norman Hascoe, 156 Country Ridge Dr., Portchester, N.Y. 10573

Filed May 26, 1972, Ser. No. 257,390
Int. Cl. B01j 17/00; H01l 7/10
U.S. Cl. 29—588 4 Claims



A conductive hermetic sealing cover for a container is fabricated by disposing the cover with a superimposed preformed heat-fusible conductive ring having outer dimensions similar to those of the cover in a shallow cavity of a nonconductive supporting member, the cavity having dimensions only slightly larger than those of the cover to secure registration between the ring and the periphery of the cover. A plurality of pairs of spaced electrodes are resiliently engaged with the ring with substantially equal contact pressures and a separate pulse of current is passed between the electrodes of each pair and through the ring and the cover, thereby producing an effective spot weld between the ring and the cover adjacent each of the electrodes. The term "ring" is used herein and in the appended claims in its generic sense to include a closed loop of conductive material of any configuration corresponding to the periphery of the cover, usually round or rectangular. The cover so fabricated is then applied to seal a container consisting of a body having a cavity therein by assembling the cover on the body with the sealing ring in contact with the body surrounding the cavity and then heating the assembly to a temperature sufficient to fuse the ring to the cover and to the body.

3,823,469

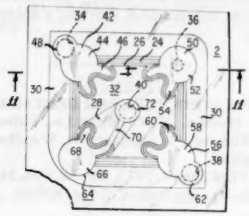
HIGH HEAT DISSIPATION SOLDER-REFLOW FLIP CHIP TRANSISTOR

Brian Anthony Hegarty, and Lewis Herbert Trevail, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 138,244, April 28, 1971, Pat. No. 3,772,575. This application Aug. 27, 1973, Ser. No. 391,665
Int. Cl. B01j 17/00
U.S. Cl. 29—589 1 Claim

An improved method of flip-chip mounting a semiconductor device, such as a transistor, on a pattern of electrical conductors carried on an insulating substrate, comprising providing the device chip with a glass protective layer and on the glass layer metallized bonding pads adjacent to the corners of the chip. Each of the bonding pads includes a relatively wide portion adapted to contain a relatively high mound of solder, and a second portion of a relatively narrow width capable of holding only a thin layer of solder. The thin solder layers overlie heat-generating P-N junction portions of the device. The conductors on the substrate have solder-wettable portions of larger areas than the bonding pads on the chip. Solder balls

are placed on the wide portions of the bonding pads and melted to reflow the solder. The chip is then placed face down over the conductors on the substrate and the solder is again



reflowed so that the relatively high mounds collapse to the thickness of the thin solder layer portions and the relatively thin solder layer portions are joined directly to the substrate conductors.

3,823,470

METHOD AND APPARATUS FOR TRIMMING MECHANICAL FILTERS

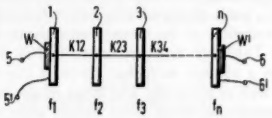
Hans Albsmeier, Munich, and Alfhart Gunther, Haar, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Sept. 24, 1971, Ser. No. 183,404

Claims priority, application Germany, Sept. 30, 1970, 2048125

Int. Cl. G01r *17/00*; **H03h** *9/00*

U.S. Cl. 29—593 **10 Claims**



Mechanical filters composed of mechanical resonators previously individually trimmed to design resonance frequencies, which are coupled to each other in succession by mechanical coupling elements, are subjected to trimming after assembly as determined by measurement of the coupled oscillations of the completed filter. This measurement is carried out under control of a computer appropriately linked by other equipment to the filter transducers. The computer identifies the frequencies of coupled oscillations and their differences from design values, and calculates the variation from design values of one or more elements of the corresponding filter matrix. By these values the computer develops settings for a trimming device for successively trimming elements of the filter such as resonators, or coupling elements, or both. In the most simplified arrangement and method, only variations of the null condition of one matrix element are considered, and the derived corrections are applied in equal parts to each of symmetrically disposed paired coupling elements.

3,823,471

PLASTIC SAFETY RAZOR

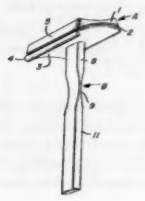
Ray L. Stone, Hemlock Terrace, P.O. Box 567, Croton Falls, N.Y. 10519

Filed Dec. 5, 1972, Ser. No. 312,297

Int. Cl. B26b *21/52, 21/06*

U.S. Cl. 30—85 **4 Claims**

A light, plastic razor except for the metal blade therein comprising a plastic cover, a guard plate, a metal blade between said guard plate and said cover, a guard edge juxtaposed below the blade edge and joined to said guard plate, a handle attached to the bottom surface of the guard plate and rectilinearly extending therefrom along a plane which is essentially perpendicular to the bottom surface, which handle is fragmented into three sequential sections, the first section is a non-flexible, rigid plastic member, the second section, which



is directly joined to said first section and the third section, is a non-stretchable flexible, elongated plastic member having a cross-sectional area, determined perpendicular to its length, which is substantially less than the corresponding cross-sectional area of the first and third sections, and the third section is a non-flexible, rigid plastic member extending from the second section.

3,823,472

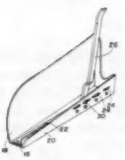
GRASS CATCHER FOR LAWN TRIMMING SHEARS

Ronald A. Richards, Victoria, British Columbia, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed June 8, 1973, Ser. No. 368,114

Int. Cl. B26b *13/22*

U.S. Cl. 30—131 **4 Claims**



A device adapted for use with a lawn trimming shears having horizontal shears and an elongated inclined handle. A bottom horizontal elongated plate having a longitudinally extending guide on top is disposed under the shears with the bottom blade along the guide. Vertical parallel side members extend upwards from opposite sides of the plate. One member extends upward only a short distance and has a plurality of horizontally aligned spaced slots. An elongated bar is pivotally secured at its bottom end to the inside of the plate at one or another of the holes. The bar is removably secured to the handle.

3,823,473

BLADE ATTACHMENT MEANS FOR SABER SAW ASSEMBLY

Simon J. Hoffman, P.O. Box 748, Saratoga, Calif. 95070

Division of Ser. No. 97,425, Nov. 9, 1970, Pat. No. 3,750,283.

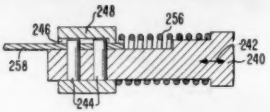
This application Apr. 20, 1973, Ser. No. 353,146

Int. Cl. B27b *19/08*

U.S. Cl. 30—338 **1 Claim**

Means for attaching a saber saw blade to the reciprocating portion of a saber saw assembly, wherein the blade can be releasably secured to the reciprocating portion which has means biased in a manner to hold the blade in such position. A

number of embodiments of the attachment means provide for quick coupling and release of a saber saw blade to the assembly. In one group of embodiments, a blade holding means utilizes a torsion spring and in a second group of embodiments, the attachment means utilizes a compression spring. The support for the attachment means can be provided with any one of a number of improved abutments for engaging a workpiece. The support can be provided with means for moving the blade in a direction away from the kerf in a workpiece.



3,823,474

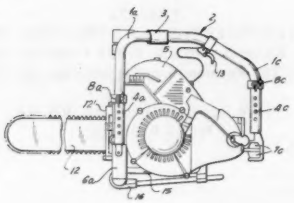
CARRYING FRAME FOR POWER SAW

Mihai Ionescu, Brasov, Romania, assignor to Institutul DE Cercetari si Proiectari Pentru Industria Lemnului, Bucharest, Romania

Filed May 2, 1973, Ser. No. 356,352

Int. Cl. B27b *17/02*

U.S. Cl. 30—383 **10 Claims**



A power saw, e.g. for cutting logs, is mounted on a skid-supported base connected at three points (partly by way of the saw motor) to a three-legged carrying frame. The legs of the frame are telescopically received in respective sockets in which they are independently adjustable with the aid of indexing pins and clamping collars.

3,823,475

DENTIST'S WORKING TOOL

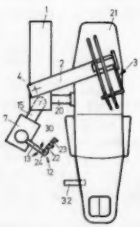
Erich Heubeck, Bensheim, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Nov. 24, 1971, Ser. No. 201,781

Claims priority, application Germany, Dec. 8, 1970, 2060278

Int. Cl. A61c *19/02*

U.S. Cl. 32—22 **11 Claims**



A working tool for dentists has a stand located at the side of the patient's chair and having an expectorating base carrying a cup or funnel for spitting and possibly a mouth spray, as well as a holder for hand carried pieces, such as sprayers and suction hand pieces. The invention is characterized in that the stand has a vertical axis about which the expectorating base swings and that the base also has a vertical axis about which an arm swings. The arm has at its free end a holder for the hand carried pieces.

3,823,476

SUPPORT STRUCTURE FOR DENTAL MODELS

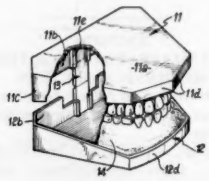
Robert Clive Hudson, 27, Crimicar Ln., Fulwood, Sheffield, and John Richards, 11, Badger Dr., Woodhouse, Sheffield, both of England

Filed June 4, 1973, Ser. No. 366,345

Claims priority, application Great Britain, June 6, 1972, 26244/72

Int. Cl. A61c *11/00*

U.S. Cl. 32—32 **7 Claims**



A support structure for orthodontic models comprises two trays arranged in opposed disposition and pivotally connected together by a hinge means which permit relative motion of the trays in simulation of the relative movement of upper and lower jaws. The hinge means is separable from at least one of the trays in a manner such that the trays can be separated linearly as well as pivotably. The hinge means is a one-piece, normally rectilinear hinge plate having each opposite end slidably received in rectilinear guide means on the rear wall of each tray.

3,823,477

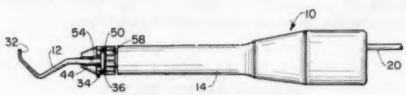
DENTAL HYGIENE TOOL

John R. Hedrick, La Crescenta, Calif., assignor to Pevrick Engineering Co., Inc., Sun Valley, Calif.

Filed Feb. 23, 1972, Ser. No. 228,674

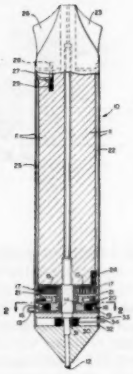
Int. Cl. A61c *3/06*

U.S. Cl. 32—58 **8 Claims**



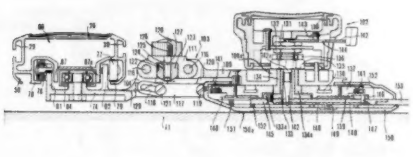
A dental hygiene tool to be connected to a sonic actuator wherein the connection to the actuator comprises an interfitting metallic ring assembly, the rings interfitting in an interfering manner to establish an extremely tight metal contact to efficiently transmit sonic vibrations.

3,823,478
DRAFTING DEVICE
George T. Farmos, 2207 Carroll St., Apt. 1, Oakland, Calif. 94606
Filed Nov. 10, 1972, Ser. No. 305,622
Int. Cl. B43l *11/04, 11/06*
U.S. Cl. 33—30 E 8 Claims



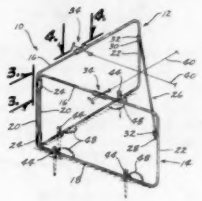
A drafting device for drawing ellipses, spirals and other complex figures is disclosed. The drafting device has a substantially vertical shaft with a writing point at the lower end thereof, and the apparatus required to draw the complex figures is contained substantially within the vertical shaft. Separate ellipse-forming and spiral-forming strings are drawable from the interior of the vertical shaft, and can be used in combination with pins or thumb tacks to draw a variety of complex shapes.

3,823,479
DRAWING INSTRUMENT
Yoshibumi Komabayashi, and Tadayoshi Iwai, both of Tokyo, Japan, assignors to Muto Industrial Company Ltd., Tokyo, Japan
Filed July 21, 1971, Ser. No. 164,767
Claims priority, application Japan, Dec. 28, 1970, 45-135592; Apr. 13, 1971, 46-27959
Int. Cl. B43l *13/02*
U.S. Cl. 33—76 R 2 Claims



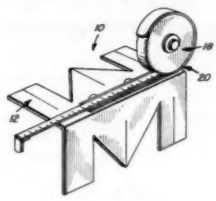
A drawing machine comprising a protractor and a mechanism for effecting angular displacement of ruler means. The instrument further comprises a dial which is attached to a head movable along the X–Y ordinate axis on the drawing board and parallel thereto. The dial is graduated in degrees and minutes of angles for indicating an angular displacement of the ruler means represented by a variation in the relative positions of the protractor and ruler means. The angular displacement of the ruler means is indicated in degrees by the position of an index on the scales of the protractor and/or in minutes by the amount of deflection of a pointer on the dial.

3,823,480
BATTER BOARDS
Thomas B. Grundman, 513 Park Ave., Cherokee, Iowa 51012
Filed May 17, 1972, Ser. No. 250,834
Int. Cl. E04g *21/18*
U.S. Cl. 33—86 4 Claims



A pair of frames rectangular in shape are formed from circular in cross section material and pivotally interconnected at one end with the opposite ends being held in spaced apart 90° relationship by a brace member. The top frame portion of each frame includes a rotatable and slidable line holder having a hand-adjustable setscrew. A pair of stakes are secured to the bottom frame portions of each frame by flexible chains and include flanges for engaging the bottom frame portions when the stakes are driven into the ground for holding the batter boards in place.

3,823,481
FRAMING LAYOUT JIG
Everett E. Chapin, Latrobe, Calif., assignor to Josephine A. Chapin, Latrobe, Calif., a part interest
Filed Sept. 25, 1972, Ser. No. 291,632
Int. Cl. B43l *7/00*
U.S. Cl. 33—96 6 Claims

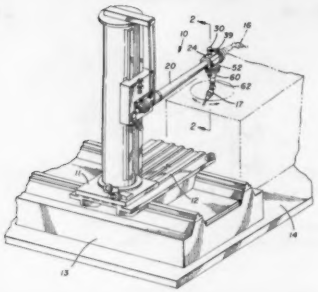


A framing layout jig having a frame provided with measuring indicia and marking surfaces, and a bracket for cooperatively connecting a conventionally marked tape measure to the frame for measuring distances for a framing layout. The frame has a pair of similar leg portions arranged at a right angle with respect to one another so as to fit along the edge of framing plates and the like. The bracket is pivotally mounted on one of these leg portions, and has a portion which retainingly embraces a substantial portion of a periphery of the housing of the tape measure.

3,823,482
INSPECTION MACHINE HAVING RIGHT ANGLE PROBE UNITS
Frederick S. Schiler, Stow, Ohio, assignor to Portage Machine Company, Akron, Ohio
Filed June 19, 1972, Ser. No. 264,005
Int. Cl. G01b *3/22, 5/00*
U.S. Cl. 33—169 R 3 Claims

An inspection machine of the type set forth in Applicant's prior U.S. Pat. No. 3,279,079 further characterized by the

provision of a second probing head adapted to perform at the outboard end of the inspection arm at right angles to the first



probing arm whereby at least two surfaces can be checked without moving the work piece. Operation after setting is remote from the point of inspection.

3,823,483

INSPECTION MACHINE

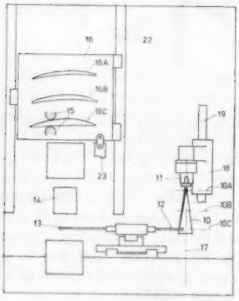
Christopher Leslie Bartlett, Bristol, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England

Filed May 15, 1972, Ser. No. 253,402

Claims priority, application Great Britain, May 15, 1971, 15186/71

Int. Cl. G01d *5/32*; **G01b** *5/20*

U.S. Cl. 33—174 PA **5 Claims**



The disclosure of this invention pertains to an inspection machine for comparing different profiles of a workpiece with profiles of corresponding masters. A probe is supported for movement relative to the workpiece and an image of a pointer connected to the probe is projected by an enlarging optical system on to a viewing screen on which the master profiles are delineated in spaced apart relationship. The screen is movable relative to the optical system to bring the respective masters into register with the image as required.

3,823,484

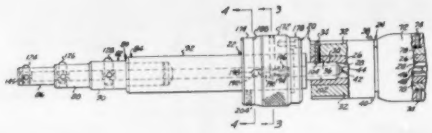
MULTI-PROBE HOLE-LOCATION AND CONCENTRICITY-MEASURING SPINDLE FOR DIAL INDICATOR GAUGE

Garf L. Dunn, Farmington, Mich., assignor to Dunn Tool Company, Livonia, Mich.

Filed Aug. 28, 1972, Ser. No. 284,407

Int. Cl. G01b *5/00, 5/24*

U.S. Cl. 33—174 Q **2 Claims**



An elongated hollow stepped probe-supporting shaft is adapted to be operatively connected to a conventional dial indicator and has four stepped portions of successively increasing diameters, the largest of which is a cylindrical pilot portion adapted to be mounted in a master fixture. The three remaining stepped cylindrical portions of successively increasing diameters are provided with axially-spaced parallel transverse bores containing three reciprocable hole-location probes. Each such probe is notched to provide a motion-transmitting contact edge. The probe-supporting shaft contains an elongated reciprocable and rotatable motion-transmitting rod provided with three circumferentially-spaced cam portions inclined relatively to one another and rotatable to selectively engage the contact edge of each probe in succession while the other two cam portions are temporarily held out of contact with the contact edges of the other two probes.

3,823,485

PLAY DETECTOR FOR DETECTING PLAY AND INSPECTING THE FASTENING OF PARTS OF STATIONARY MOTORCARS AND TRAILERS

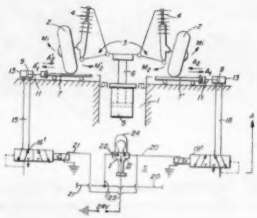
Willy Lambrecht, Destelbergen, Belgium, assignor to Appareillage Technique et Industriel S.A., Brussels, Belgium

Filed Apr. 21, 1972, Ser. No. 246,263

Claims priority, application Belgium, Sept. 16, 1971, 108239

Int. Cl. G01b *19/28*

U.S. Cl. 33—203.14 **8 Claims**



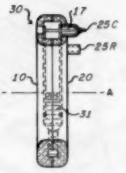
Checking apparatus is provided to check play and looseners of vehicle parts. Spaced plates are employed to support the wheels of a vehicle which otherwise is supported by a jack. Valves control the operation of piston-cylinder combinations to move the plates transversely and longitudinally of the vehicle.

3,823,486

TOROIDAL ELECTROLYTIC SENSOR AND METHOD OF MANUFACTURE

Ghanshyam A. Bhat, Tempe, and Charles G. Buckley, Phoenix, both of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 247,078
Int. Cl. G01c 9/06, 9/20
U.S. Cl. 33—366 4 Claims



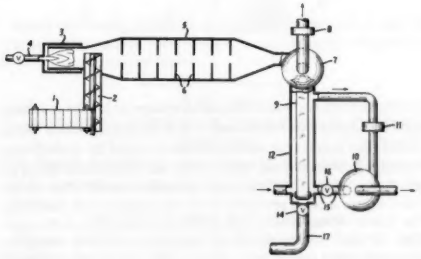
A sealed toroidal sensor is formed from two members each including a channel that defines an inner arcuate chamber having a cross-sectional area with a characteristic dimension along a prescribed section of its arcuate length for a given linear angular range and a reduced cross-sectional area along the remaining section of its arcuate length to provide an improved temperature insensitivity. A first electrode is deposited along the prescribed section in the channel of a first of said members and second and third electrodes are deposited along oppositely disposed arcuate lengths of the prescribed section in the channel of the second of said members. After the two members are joined together forming the toroidal housing, an electrolyte is added to the inner chamber which covers relative portions of the electrodes and varies the impedance of the second and third electrodes with respect to the first electrode in accordance with the angular displacement of the device. A novel method of manufacture of the sensor is also disclosed.

3,823,487

METHOD FOR DRYING MOISTURE FROM WET SPENT COFFEE GROUNDS

Peter Cherry, Brackley, England, assignor to Cherwell Valley Silos Limited, Oxfordshire, England

Filed Feb. 22, 1973, Ser. No. 334,592
Claims priority, application Great Britain, Feb. 22, 1972, 8227/72
Int. Cl. F26b 7/04
U.S. Cl. 34—10 5 Claims



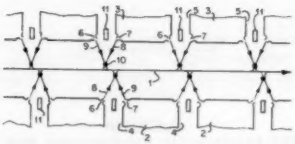
A method for drying wet spent coffee grounds to remove moisture therefrom is disclosed. The wet spent coffee grounds are entrained in a hot gas stream passing through a rotary drum drier to remove moisture therefrom and transport them through the drum. Grounds from which moisture has been removed to a desired level pass out of the drum drier with the hot gas stream while grounds containing moisture in excess of the desired level and falling from the stream during transport through the drum are collected in a compartment therein and conveyed in an unobstructed circular travel course about the hot gas stream for gravity return of such collected grounds to the stream for further moisture removal, the grounds being collected and returned to the stream as often as required to reduce the moisture therein to the desired level. Coffee grounds passing out of the drum with the moisture-laden gas stream are separated from the gas stream and cooled.

3,823,488

APPARATUS FOR FULL-WIDTH SUSPENSION GUIDANCE OF WEBS OF MATERIAL

Heinz Houben, Monchengladbach; Carl Kramer, Aachen, and Heinrich Stein, Laurensberg near Aachen, all of Germany, assignors to A. Monforts, Monchengladbach, Germany

Filed Apr. 28, 1972, Ser. No. 248,382
Claims priority, application Germany, Apr. 28, 1971, 2120805
Int. Cl. F26b 13/20
U.S. Cl. 34—156 18 Claims



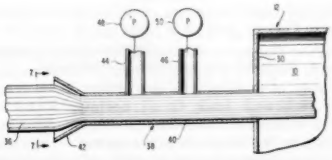
Apparatus for full-width suspension guidance of a web of material on a fluid cushion includes a plurality of nozzle boxes located adjacent one another in a direction parallel to a plane, in which a web of material is disposed, the nozzle boxes being formed with respective jet nozzles inclined transversely to direction of travel of the web, and return flow channels for removing fluid blown onto the web from the jet nozzles, the return flow channels being disposed alternately with the nozzle boxes in travel direction of the web, the return flow channels being open gaps defined by respective adjacent nozzle boxes, the inclined jet nozzles being disposed respectively at both sides of each of the return flow channels and being inclined with respect to one another as to direct into regions between the respective return flow channel and the plane of the web inclined jets of fluid from the nozzle boxes at opposite sides of the respective return flow channels which penetrate one another pairwise, interfere one with the other and flow out through the respective return flow channels after being deflected at the web.

3,823,489

VACUUM LOCK FOR PLASMA TREATMENT OF SUBSTRATES

Abraham A. Boom, Martinsville, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 171,282, Aug. 12, 1971, Pat. No. 3,723,289. This application Sept. 26, 1972, Ser. No. 292,455
Int. Cl. F26b 25/00
U.S. Cl. 34—242 11 Claims



A method and apparatus for efficiently generating a gaseous plasma particularly for the treatment of substrates. A radio

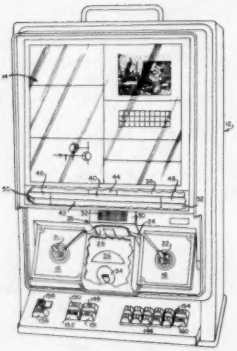
frequency electrical signal is applied to two electrodes disposed exteriorly of an electrically insulative, gas impervious envelope. A central passage extends into the envelope and one electrode is disposed in the central passage. The electrodes are separated at least in part by the envelope and the radio frequency signal applied to the electrodes excites the gas within the envelope to thereby generate a gaseous plasma therein. The gas conditions within the envelope differ from the gas conditions exteriorly thereof and the amplitude of the radio frequency signal is insufficient to generate a plasma outside the chamber defined by the envelope. Since the plasma does not contact the electrodes, efficiency is maximized and the plasma is not contaminated by the electrodes. In addition, the surface areas of the electrodes differ substantially thereby creating a plasma within the envelope which varies in concentration in a predetermined manner, with the concentration being greatest near the center of the envelope. A substrate may therefore be contacted by varying plasma concentration as it passes through the envelope and the outer wall of the envelope is not contaminated by the plasma. A vacuum lock for preventing gas leakage into the envelope is also disclosed.

3,823,490

ADAPTIVE DIAGNOSTIC AID CONSOLE FOR SYSTEM MAINTENANCE

Edward H. Konik, Burlington; Stanley C. Drozd, Marblehead, both of Mass.; Charles W. Small, Derry, N.H.; Robert W. Stuart, Bedford, Mass.; Richard E. Cox, Lynn, Mass., and William R. Dery, Georgetown, Mass., assignors to Dynamics Research Corporation, Wilmington, Mass.

Filed Oct. 20, 1971, Ser. No. 190,701
Int. Cl. G09b *7/00*
U.S. Cl. 35—10 **6 Claims**



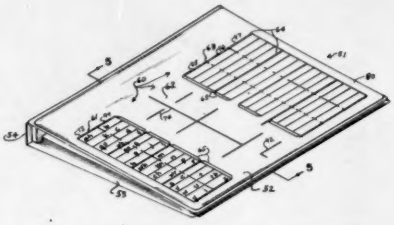
An adaptive diagnostic aid console for system maintenance. The console employs a microfilm strip in order to present a visual display of maintenance instructions. Each instruction set, when followed, leads to an operator made decision between predetermined alternatives. The operator indicates the decision to the console which responds by automatically stepping to a corresponding point on the microfilm strip to display a further set of instructions leading to a corresponding decision. System trouble is ultimately spotted by narrowing in on the difficulty with this organized and rapid approach.

3,823,491

READING AND SPELLING TEACHING AID

Mary L. Lehmann, 4552 McPherson Ave., St. Louis, Mo. 63108

Filed Oct. 30, 1972, Ser. No. 301,854
Int. Cl. G09b *17/00*
U.S. Cl. 35—35 R **8 Claims**



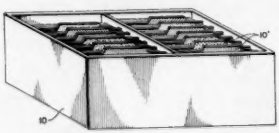
A teaching device includes a board having a plurality of phonic representations displayed in columns. The columns generally are tabulations of consonant-vowel-consonant sounds. Forty three sounds including arrangements for 16 vowel sounds are displayed in a variety of spelling configurations. Means are provided for selecting portions of the phonic representations corresponding to a given word. A game method is disclosed which uses the device of this invention to convey information. A player or student selects sounds from those presented to solve a word problem.

3,823,492

COLOR KEYED EDUCATION APPARATUS

Althea S. Allain, 4232 Tumonville St., New Orleans, La. 70122

Filed July 3, 1972, Ser. No. 268,845
Int. Cl. G09b *1/32, 17/00*
U.S. Cl. 35—35 J **5 Claims**



A color keyed or coded education system or kit for teaching a sight vocabulary of functional words including: color cards on which the functional words are color keyed by underlining or by color printing of the word itself, the color cards being of three types, word, phrase, and sentence cards; correlated readers whose covers are colored in correlation with the color of the words of the color cards which are included in the particular reader involved; color coded individual progress charts; and color coded tests whose color designation again is correlated with the color of the words of the color cards which are included in the particular test. The correlating colors of the correlating kit are red, orange, yellow, blue, green, purple and brown, the first six of which are repeated in sets in order to use only those colors which children in big city schools are familiar. Seven color discs and crayons identical to the colors used in the kit are included for use in teaching initial color concepts when necessary. All elements of the kit are thus color coded or keyed together.

3,823,493

FOAM POLYURETHANE BOOT WITH LINING

Michael Brehm, Weinheim, and Peter Rutsch, Unterabtsteinach, both of Germany, assignors to Carl Freudenberg, Weinheim, Germany

Continuation-in-part of Ser. No. 832,386, June 11, 1969, abandoned. This application Oct. 29, 1971, Ser. No. 193,673

Int. Cl. A43b

U.S. Cl. 36—2.5 R 7 Claims

Improvement in the formation of footwear, particularly boots, by molding polyurethane foam in the annular space between a last and a boot outer mold. In a preferred aspect, there is provided a fabric on the inside wall of the foam, molded boot. In a most preferred aspect, the fabric is bonded to a plastic film of, for example, polyvinyl chloride, and the film bonded fabric is placed over the last in a mold whereupon polyurethane foam precursor is foamed in the mold and adhered to the film thereby adhering indirectly to the fabric while not penetrating such fabric interstices. In another aspect of this invention, reinforcing means, of steel or reinforced plastic, is molded right into the boot during formation thereon.

3,823,494

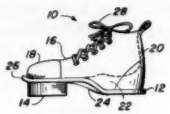
FOOTWEAR WITH HEEL AND TOE POSITIONS REVERSED

Cecil Stemp, Rt. 1, Box 120-A, Jarrettsville, Md. 21084

Filed Nov. 20, 1973, Ser. No. 417,604

Int. Cl. A43b

U.S. Cl. 36—2.5 R 9 Claims



Footwear having heel and toe positions reversed so that the wearer leaves tracks indicating a travel direction opposite to the actual direction of travel.

3,823,495

ROTATABLY DRIVEN CUTTER FOR A SUCTION DREDGER

Carl David Robertson, Akersloot, Netherlands, assignor to N.V. Industrieele Handelscombinatile Rotterdam, Netherlands

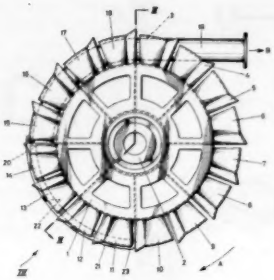
Filed Feb. 1, 1973, Ser. No. 328,604

Claims priority, application Netherlands, Feb. 4, 1972, 7201500

Int. Cl. E02f *3/92*

U.S. Cl. 37—66 4 Claims

A rotatably driven cutter for a suction dredger has a rotatable member with two series of axially spaced scoop-shaped cutters disposed in parallel planes and carried by the rotatable member. The suction tube of the dredger extends over the shaft of the rotatable member and terminates downwardly at about the level of the rotation axis of the member and is extended by a guide plate that continues peripherally between the outer ends of the cutters and terminates below the shaft of the rotatable member. The rotatable member rotates in a direction such that the scoops first encounter the guide plate



so that the dredged solids are confined laterally between the cutters and radially between the rotatable member and the guide plate, and then are carried in the direction of rotation toward the mouth of the suction tube.

3,823,496

CONNECTION DEVICE FOR DIPPER OR RIPPER TEETH, PARTICULARLY FOR TWO-PIECE TEETH OF A DIPPER

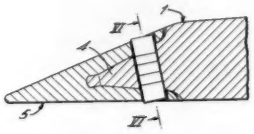
Carlo Querci, and Carlo Zucchinali, both of Lovere, Italy, assignors to Italsider S.p.A., Genoa, Italy

Filed Mar. 16, 1972, Ser. No. 235,359

Claims priority, application Italy, Mar. 18, 1971, 12578/71

Int. Cl. E02f *9/28*; E21c *35/18*

U.S. Cl. 37—142 A 6 Claims



The present invention includes means, in dipper or ripper teeth and particularly in the two-piece teeth of a dipper, for inhibiting the shoe from separating from the tooth, without any need for another element in the connection element for preventing said connection element from falling out. Further, the connection element may operate on casting surfaces and thus no tool treatment is required for the seat of said connection element.

3,823,497

STEAM GENERATING AND CONTROL SYSTEM

Alvin I. Solomon, Forest Hills, N.Y., assignor to Durable International, Inc., Astoria, N.Y.

Filed May 2, 1973, Ser. No. 356,326

Int. Cl. D06f *75/06*

U.S. Cl. 38—77.6 17 Claims

A steam generating and control system for supplying steam to a steam iron in accordance with the steam requirements of the iron. The system includes a water supply pipe through which water is supplied serially to a pressure regulator and a first solenoid valve. The first solenoid valve leads to a steam generating chamber and a second solenoid valve controls the

frequency electrical signal is applied to two electrodes disposed exteriorly of an electrically insulative, gas impervious envelope. A central passage extends into the envelope and one electrode is disposed in the central passage. The electrodes are separated at least in part by the envelope and the radio frequency signal applied to the electrodes excites the gas within the envelope to thereby generate a gaseous plasma therein. The gas conditions within the envelope differ from the gas conditions exteriorly thereof and the amplitude of the radio frequency signal is insufficient to generate a plasma outside the chamber defined by the envelope. Since the plasma does not contact the electrodes, efficiency is maximized and the plasma is not contaminated by the electrodes. In addition, the surface areas of the electrodes differ substantially thereby creating a plasma within the envelope which varies in concentration in a predetermined manner, with the concentration being greatest near the center of the envelope. A substrate may therefore be contacted by varying plasma concentration as it passes through the envelope and the outer wall of the envelope is not contaminated by the plasma. A vacuum lock for preventing gas leakage into the envelope is also disclosed.

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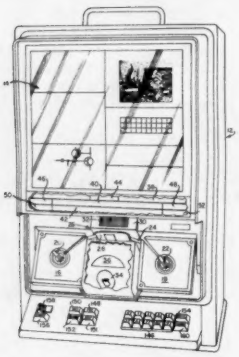
Filed Oct. 20, 1971, Ser. No. 190,701
Int. Cl. G09b *7/00*
U.S. Cl. 35—10 **6 Claims**



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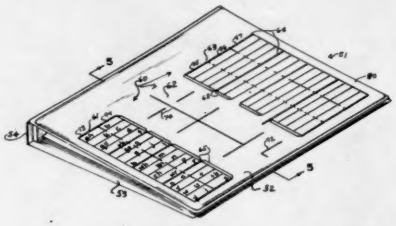

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3,823,492

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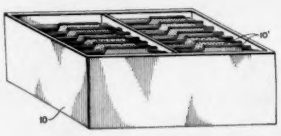
Filed July 3, 1972, Ser. No. 268,845
Int. Cl. G09b *1/32, 17/00*
U.S. Cl. 35—35 J **5 Claims**



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Continuation-in-part of Ser. No. 832,386, June 11, 1969, abandoned. This application Oct. 29, 1971, Ser. No. 193,673

Int. Cl. A43b

U.S. Cl. 36—2.5 R 7 Claims

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3,823,494

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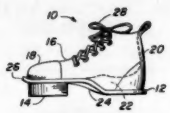
Filed Nov. 20, 1973, Ser. No. 417,604

Int. Cl. A43b

U.S. Cl. 36—2.5 R 9 Claims



Footwear having heel and toe positions reversed so that the wearer leaves tracks indicating a travel direction opposite to the actual direction of travel.

3,823,495

ROTATABLY DRIVEN CUTTER FOR A SUCTION DREDGER

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Filed Feb. 1, 1973, Ser. No. 328,604

Claims priority, application Netherlands, Feb. 4, 1972, 7201500

Int. Cl. E02f *3/92*

U.S. Cl. 37—66 4 Claims

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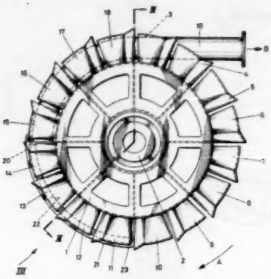


so that the dredged solids are confined laterally between the cutters and radially between the rotatable member and the guide plate, and then are carried in the direction of rotation toward the mouth of the suction tube.

3,823,496

CONNECTION DEVICE FOR DIPPER OR RIPPER TEETH, PARTICULARLY FOR TWO-PIECE TEETH OF A DIPPER

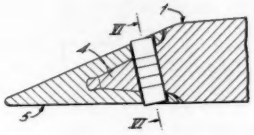
Carlo Querci, and Carlo Zucchinali, both of Lovere, Italy, assignors to Italsider S.p.A., Genoa, Italy

Filed Mar. 16, 1972, Ser. No. 235,359

Claims priority, application Italy, Mar. 18, 1971, 12578/71

Int. Cl. E02f *9/28*; E21c *35/18*

U.S. Cl. 37—142 A 6 Claims



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3,823,497

STEAM GENERATING AND CONTROL SYSTEM

Alvin I. Solomon, Forest Hills, N.Y., assignor to Durable International, Inc., Astoria, N.Y.

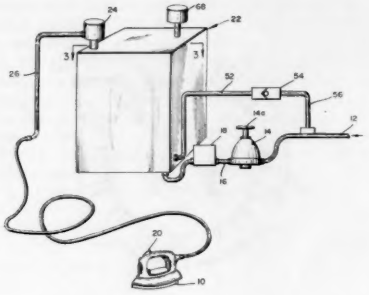
Filed May 2, 1973, Ser. No. 356,326

Int. Cl. D06f *75/06*

U.S. Cl. 38—77.6 17 Claims

A steam generating and control system for supplying steam to a steam iron in accordance with the steam requirements of the iron. The system includes a water supply pipe through which water is supplied serially to a pressure regulator and a first solenoid valve. The first solenoid valve leads to a steam generating chamber and a second solenoid valve controls the

communication between the steam generating chamber and the steam iron. A microswitch is operatively associated with the iron and upon being actuated opens each of the solenoid



valves to allow water to be directed to the steam generating chamber and the steam formed therein to be transferred to the iron.

3,823,498

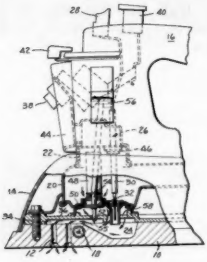
SELF CLEANING STEAM IRON

William E. Davidson, Ontario, Calif., assignors to General Electric Company, Bridgeport, Conn.

Filed Apr. 26, 1973, Ser. No. 354,641

Int. Cl. D06f *75/06*

U.S. Cl. 38—77.83 **9 Claims**



A self-cleaning steam iron with means to purge the iron of water and steam by providing a substantially large opening in the iron's water tank separate and distinct from the metering orifice through which water is normally dripped to make steam in a flash boiler type iron. The large opening is controlled so that, upon dumping, the water is conducted directly to the boiler in the hot soleplate so that the additional steam suddenly generated substantially cleans the entire tank, steam distribution system, boiler, and steam ports which are forcefully purged of water, steam, loose residues, and entrapped lint.

3,823,499

ADJUSTABLE FRAME

Howard E. Gilbert, P.O. Box 294, Deering St., East Setaucket, N.Y. 11733

Filed June 16, 1970, Ser. No. 46,638

Int. Cl. G09f *1/12*

U.S. Cl. 40—155 **11 Claims**

An adjustable frame comprising corner members, cross braces for connecting said corner members, the cross braces comprising strips which can be cut down or bent back so as to adjust the cross braces to any desired frame size, a plurality of apertures on each of the cross braces performing a double function, the first function being to provide apertures for connecting the brace to diagonally opposite corner member, the second function being to provide means for anchoring a suspension wire to the frame. Two of the corner members include means for adjustably connecting the cross brace thereto so as to assure that the cross brace is tight. Each of the corner members further include stand receiving means to permit the frame to be supported on end or on its side. The stand is an L-

shaped member capable of being selectively inserted in the stand receiving means so as to permit the frame to be weighted down or anchored to the ground. Each of the corner members may include spring biased means so as to readily accommodate and grasp articles of varying thicknesses. The frame is designed so that the spring clips and cross frame braces lie flush or within the confines of the corner members so as to minimize interference in hanging or storing the framed articles. The frame may be designed without cross braces so that pictures and the like may be viewed from both sides of the frame.

3,823,500

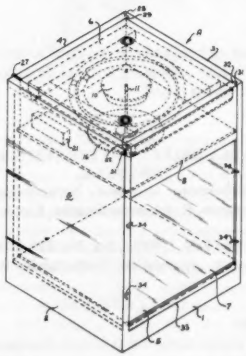
ADVERTISING AND PROMOTIONAL DISPLAY APPARATUS

Leonard Spitz, St. Louis, Mo., assignor to Advertisers Display & Exhibits, Inc., St. Louis, Mo.

Filed Dec. 26, 1972, Ser. No. 318,169

Int. Cl. G09f *13/12*

U.S. Cl. 40—219 **14 Claims**



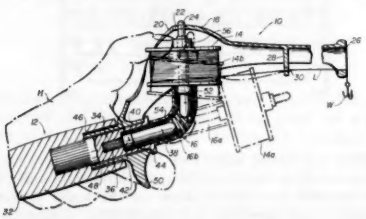
In an advertising display apparatus, a compartment is formed having image reflecting surfaces provided on the back, bottom and side walls, while a transparent mirror surface is provided upon the front wall, and in this manner, viewing of

multiple images formed of the device displayed within the apparatus can be achieved. The image reflecting surfaces are cushion mounted to their respective walls, so that during transit, they will not be fractured, and either the front or back wall of the compartment is hingedly or slidingly mounted to provide easy access for quick rearrangement of the advertising displays. A translucent surface provides an upwardly disposed space for mounting of the lighting source, and furnishes full illumination of the device being displayed.

3,823,501
HOOK SETTER APPARATUS
Samuel M. Bybee, Hewins, Kans.
Filed June 8, 1972, Ser. No. 261,002
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **3 Claims**

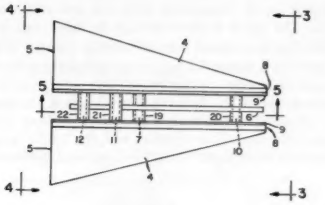
This invention is a hook setter apparatus for fishing purposes operable to be secured to a support structure to elevate the same over a water surface and having means to activate a connected fish hook assembly on movement thereof to automatically hook a fish member. More particularly, this invention is a hook setter apparatus having a housing means, and a connector means operable to 1. support the apparatus on a tree limb or the like and 2. support a fish hook assembly attached to the lower end of the housing means and operable upon movement of the fish hook assembly to actuate the actuator means to provide a spring tension to hook and then to hold a fish member.

3,823,502
REEL ASSEMBLY
James H. Countryman, Dayton, Ohio, assignor to Roger S. Dybvig, Dayton, Ohio
Filed June 22, 1971, Ser. No. 155,419
Int. Cl. A01k *89/00*
U.S. Cl. 43—20 **20 Claims**



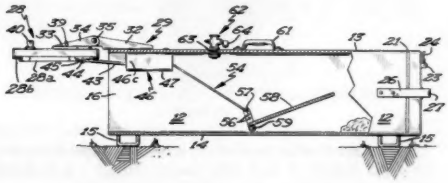
Line is wound onto a spool rotated by twirling the spool. Three models of a small hand held fishing device are illustrated utilizing a twirling spool with which the fishing line may be cast with a slinging motion. The spools are connected to handles by flexible connectors permitting the line to be cast in spin cast fashion with the axis of the spool pointing generally toward the direction of the cast. Preparatory to reeling the line in, the spools are moved to positions at an angle to the casting positions before the spools are twirled. Two of the illustrated models are designed to permit the spools to be rotated about their axes instead of twirled. Accordingly, the line can also be reeled in by using the spools as winding drums. In one of these two models, the spool is directly manipulated by the user and pivoted to the reeling position at which it is held by means of a shell-like holder and line guide. In the other of these two models, the spool is remotely engaged by a lever operator and it may be held in its reeling position by engagement of portions of the lever with the shell. The third illustrated model has an annular raceway fixed in relation to the handle against which the spool tracks when the line is reeled in.

3,823,503
FISHING SINKER
Harry Niles Smith, 64 Ontario St., Corning, N.Y. 14830
Filed July 9, 1973, Ser. No. 377,336
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.13 **5 Claims**



Elongated body members having sled-like leading edges are fixed together in side-by-side relationship. Each of the outside body members is provided with an outwardly directed wing which slants outwardly therefrom in a rearward direction. A keying member is pivotally connected between the body members at a point spaced rearwardly of the centers thereof.

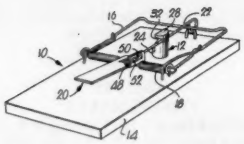
3,823,504
HUMANE ANIMAL TRAP
Mathew L. Dosch, Box 251, Ipswich, S. Dak. 57451
Filed Jan. 19, 1973, Ser. No. 324,965
Int. Cl. A01m *23/18*
U.S. Cl. 43—61 **8 Claims**



A humane animal trap comprises an elongate generally rectangular housing formed of impervious material and having a spring urged trap door closing the front end thereof. A releaseable latch retains the trap door in an open or set position and is released by operation of a cam trigger. The trigger is connected to and is operated by a treadle plate. The housing

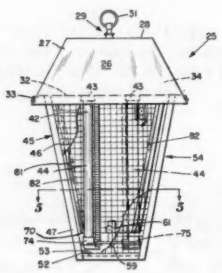
is provided with a valve which permits a user to introduce a predetermined amount of an anesthetizing fluid, such as chloroform or the like, into the housing for anesthetizing the trapped animal.

3,823,505
SAFETY CATCH FOR TRAP
Ronald A. Holt, Lawrence, Kans., assignor to Chali A. Holt; Joan B. Holt and Ivan. N. Holt, all of Lawrence, Kans., part interest to each
Filed Feb. 5, 1973, Ser. No. 329,888
Int. Cl. A01m 23/30
U.S. Cl. 43—81.5 5 Claims



A safety catch for a conventional mousetrap or the like in which a spring-loaded jaw is maintained in an open position by a shiftable latch engageable with the jaw and a bait-holding treadle. The catch is mounted on the base and is selectively shiftable for movement into and out of contact with the latch and includes a notch for receiving and seating the latch when the catch is in contact therewith. The safety catch is so positioned relative to the latch that the latter is clamped and stabilized in a fixed, inoperative condition relative to the treadle as long as the catch is in contact with the latch, the same being held against movement in both vertical and horizontal planes.

3,823,506
INSECT TRAP WITH SAFETY FEATURES
Robert E. Iannini, Milford, N.H., assignor to Rid-O-Ray, Inc., Nashua, N.H.
Filed Feb. 5, 1973, Ser. No. 329,720
Int. Cl. A01n 1/22
U.S. Cl. 43—112 9 Claims

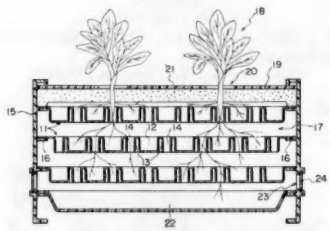


A fluorescent tube, meshed electrode type insect trap has the upper portion of each tube passing through a hole in the lower mounting plate of a hollow cover so that the upper socket, reversed starter and all other components are protected from the elements. The exposed lower part of each tube and the high voltage grids depend below the mounting plate and are encompassed by a non-electrified, fine mesh cage with fine mesh bottom for safety of the user. A flat pair of electrodes may be straddled by a pair of tubes or a pair of cylindrical electrodes may encircle a single tube.

3,823,507
ROLLING TOY HOOP
Theodor Berner, Ludwig-Blum-Strasse 2, D-7000 Stuttgart, 60 (Wangen), Germany
Filed Mar. 6, 1973, Ser. No. 338,510
Int. Cl. A63h 33/02
U.S. Cl. 46—220 11 Claims

A toy device wherein a hoop can be rolled and steered along the ground by a cord which is attached to one end of a manually held guide rod. The cord is connected to a coupling ring which is received in one or more transversely extending recesses of the hoop so as to be turnable on but to be held against movement in the circumferential direction of the hoop. By exerting a pull on the cord while the coupling ring travels upwardly and away from the ground, the user can impart to the hoop a driving momentum to thereby accelerate the hoop. The hoop will travel along an arcuate path if the coupling ring is turned to move its point of connection with the cord to the one or the other side of the hoop while the coupling ring is located at the uppermost point of the hoop and if the cord is swung sideways to tilt the hoop.

3,823,508
PLANT CULTIVATING APPARATUS
Hiraki Takehara, Nigawa-cho 3-chome 13-ban 7-go, 662 Hyogo-ken, Nishinomiya-shi, Japan
Filed June 30, 1972, Ser. No. 268,170
Claims priority, application Japan, July 1, 1971, 46-48390; Feb. 19, 1972, 47-17493; Mar. 4, 1972, 47-26702
Int. Cl. A01g 9/02
U.S. Cl. 47—1.2 18 Claims

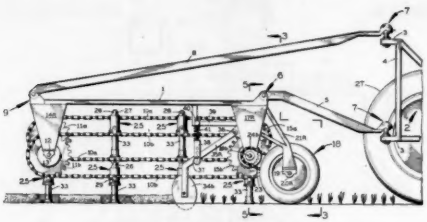


A plant cultivating apparatus comprising a tray member having recessed portions on the upper surface for collecting a liquid fertilizer, recessed portions on the lower surface for ventilation, and openings for establishing communication between the upper and lower surface sides, the tray member being disposed in a root growing space, whereby sufficient amounts of fertilizer and air are fed to the roots of plants being cultivated.

3,823,509
MACHINE FOR THINNING AND CULTIVATING SEEDLING PLANTS

Harold Arve, 25320 S.W. 108 Ave., Homestead, Fla. 33030

Filed July 2, 1973, Ser. No. 375,901
Int. Cl. A01b 41/00
U.S. Cl. 47—1.43 5 Claims

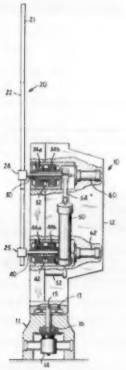


A tractor motivated machine for thinning and cultivating seedling plants in field rows. The transmission of the machine is driven by a tracking wheel for placing each of a plurality of casings over plants at predetermined spacing for a temporary period and permitting a disc plow means on the machine to bury the unwanted intervening plants and protect the desired plants by suction drawing each into a casing by a vacuum supplied thereto by the tractor when the latter is driven astride the row of plants.

3,823,510
AUTOMATICALLY POSITIONABLE GATE ASSEMBLY

Sergio Panaccione, Rome, Italy, assignor to Sigma-Tau Industries Farmaceutiche Riunite S.p.A., Rome, Italy

Filed July 24, 1972, Ser. No. 274,421
Claims priority, application Italy, July 22, 1971, 51815/71
Int. Cl. E05d 15/40
U.S. Cl. 49—247 10 Claims

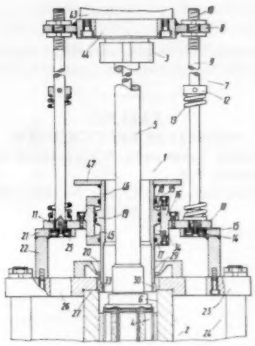


A gate assembly comprises an angularly displaceable support structure disposed along a path to be gated and a gate member is pivotally mounted on the support structure for pivotal raising and lowering movement between a vertical, nonworking position wherein the gate member does not extend across the path and a horizontal, working position wherein the gate member extends across and blocks the path. The gate member is also mounted for linear movement towards and away from the support structure to enable extremely accurate positioning of the gate member. An oscillatory fluid motor effects angular displacement of the support structure and a set of reciprocatory fluid motors effect raising and lowering of the gate member as well as movement of the gate member towards and away from the support structure. A fluid control circuit automatically actuates the various fluid motors in a predetermined sequence.

3,823,511
MEASURING DEVICE FOR SURFACES TO BE MACHINED ON MACHINE TOOLS

Christoph W. Gehring, Nellingen, Germany, assignor to Maschinenfabrik Gehring KG, Nellingen, Germany

Filed Sept. 15, 1971, Ser. No. 180,618
Claims priority, application Germany, Sept. 19, 1970, 2046358
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—34 R 9 Claims



A measuring device for a machine tool, particularly a honing machine, which hones cylindrical surfaces in which the measuring device comprises a body concentric with the surface and have resilient fingers extending axially toward the surface with feeler elements on the free ends. The feeler elements have inclined ramps on the sides facing the surface and are pressed against the workpiece at the end of the surface. When the surface is machined to the proper size, the feeler elements move on to the surface and a switch is actuated to halt the machining operation. The feeler elements are moved axially toward the surface together with the tool and are halted at the surface and are then biased with the predetermined force against the end of the workpiece by a fluid pressure device.

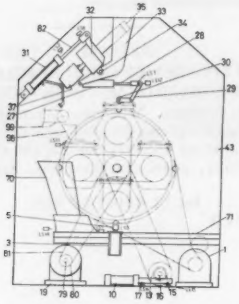
3,823,512
AUTOMATIC CENTRIFUGAL BARREL FINISHING APPARATUS

Hisamine Kobayashi, Nagoya, Japan, assignor to Shikishima Tipton Manufacturing Company Limited, City of Nagoya, Japan

Filed Mar. 6, 1972, Ser. No. 231,874
Claims priority, application Japan, Mar. 12, 1971, 46-13833
Int. Cl. B24b 31/02
U.S. Cl. 51—164 13 Claims

An automatic centrifugal barrel finishing apparatus is described, in which all processes are operated in due order determined by a sequence program using a sequence con-

troller. The device includes an opening and closing apparatus for the lid, a discharging apparatus for the finished materials, a



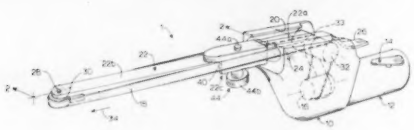
charging apparatus for charging unfinished materials and driving motors for the barrels between a pair of turrets.

3,823,513

MINIATURE BELT GRINDER

Walter N. Welsch, Tonawanda, N.Y., assignor to Dynabrade, Inc., Tonawanda, N.Y.

Filed Oct. 12, 1973, Ser. No. 406,005
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 EB **5 Claims**



A hand tool grinder having an endless belt entrained about a non-parallel drive and idler pulleys such that the flights thereof pass over a pair of direction change pulleys. The idler pulley and direction change pulleys are mounted adjacent opposite ends of a compound arm having an adjustment device to effect relative tilting movements of the idler pulley mounting end of the arm for controlling tracking of non-uniformly worn belts.

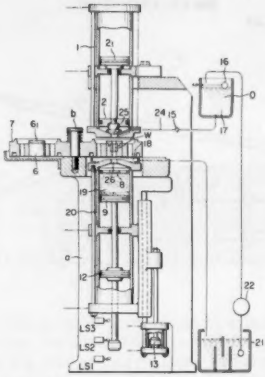
3,823,514

HYDRAULIC GRINDING METHOD

Takeo Tsuchiya, Tokyo, Japan, assignor to Honda Koki Kabushiki Kaisha and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 3, 1972, Ser. No. 303,657
Claims priority, application Japan, Nov. 8, 1971, 46-88916
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 P **2 Claims**

Sharp edges and burrs formed at the open ends of machined holes or at their intersections can now be removed efficiently by the method of the invention, in which a grinding medium composed of viscous oil and abrasive grits such as of alumina is forced through the machined hole alternately in opposite directions. During the grinding process, most of abrasive grits are held in the lower portion of the whole mass of the grinding medium used due to the difference in specific gravity between the two medium components and the upper thinner portion of the mass is forced through the hole alternately ahead of and following the thickner mass portion. This serves to effectively lubricate the machined hole and thus enables efficient removal of sharp edges and appendant burrs while eliminating



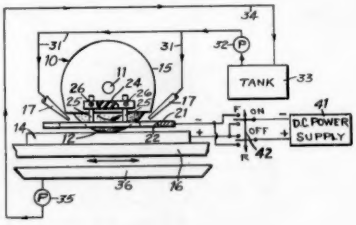
any danger of the abrasive grits or aggregates thereof clogging the hole or marring the wall surface thereof irrespective of the hole diameter.

3,823,515

METHOD AND MEANS OF GRINDING WITH ELECTROPHORETIC ASSISTANCE

Loring Coes, Jr., Princeton, Mass., assignor to Norton Company, Worcester, Mass.

Filed Mar. 27, 1973, Ser. No. 345,310
Int. Cl. B24b *1/00*
U.S. Cl. 51—322 **9 Claims**



A grinding system in which an electrically conductive workpiece is moved against and relative to a rotating grinding wheel, an electrode spaced from and electrically insulated from the workpiece, means to maintain the space between the workpiece and the electrode filled with an electrically substantially nonconducting coolant fluid containing electrically charged particles of a cutting fluid or other cutting agent, and a direct current power source connected to so charge the workpiece and the electrode that the charged particles of a cutting fluid or other cutting agent migrate to and form a film upon the surface of the workpiece as it passes beneath the grinding wheel.

3,823,516

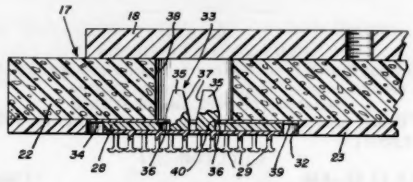
MOTION IMPARTING MEMBER INCORPORATING HOLDING MEANS FOR NONWOVEN FIBROUS ABRASIVE PADS

Warren E. Christian, Troy, N.Y., assignor to Norton Company, Troy, N.Y.

Continuation-in-part of Ser. No. 92,485, Nov. 24, 1970, abandoned. This application Dec. 19, 1972, Ser. No. 316,447

Int. Cl. B24d *17/00, 13/14*

U.S. Cl. 51—358 25 Claims



Surface finishing means comprising nonwoven fibrous material is held firmly but removably on a member capable of imparting motion to the finishing means by a plurality of discrete, spaced-apart holding means located in the surface of the motion imparting member comprising a plurality of hook-like members on a base member.

3,823,517

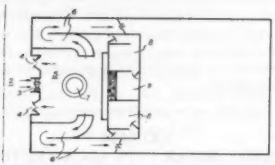
CINEMATOGRAPHIC SYSTEM

Arturo Castrejon Penaloza, Vicente Guerrero No. 19, Acapulco, Mexico

Filed Feb. 12, 1973, Ser. No. 331,395

Int. Cl. E04h *3/10*

U.S. Cl. 52—6 3 Claims



A cinematographic system for a simultaneous projection of different films or movies, comprising two or more exhibition rooms integrally grouped, a common main hall and a common access passageway to the exhibition rooms, a common projection machinery room, a common space for housing electric cables, drainages or similar and an also common space, for air conditioning, heating and the like facilities.

3,823,518

REINFORCED FIBERGLASS PLASTIC ROOF FOR BOX CARS

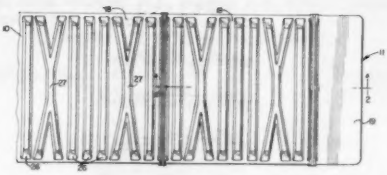
John W. Allen, Flossmoor, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed Jan. 5, 1973, Ser. No. 321,339

Int. Cl. B61d *17/12*; E04d *3/34*

U.S. Cl. 52—53 6 Claims

A railway vehicle roof including a plurality of sections made from molded reinforced fiber glass plastic sheets. The molded plastic sheets include a pair of transversely extending and lengthwise spaced ribs, a pair of spaced X-shaped ribs disposed between the transversely extending ribs, and a plurality of ribs extending between the X-shaped ribs. Upstanding flanges are formed along the transverse edges of the panel. A seam cap fits over adjacent ones of the upstanding flanges.



3,823,519

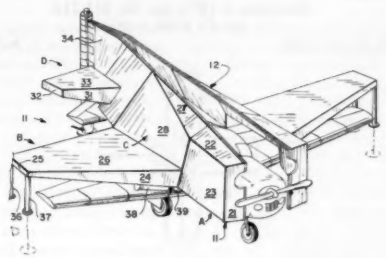
AIRCRAFT HANGER

Elmer Cordova, 5805 S. Santa Fe Dr., Denver, Colo. 80120

Filed July 27, 1972, Ser. No. 275,461

Int. Cl. E04b *1/346*

U.S. Cl. 52—65 4 Claims



A light weight individual hanger for an aircraft includes two mirror image, symmetrical cover sections made of a light weight framework covered by an outer covering pivotally mounted at the rear about a vertical axis to swing from a closed aircraft covering and to an open aircraft release position. A lift jack at the vertical axis raises the cover sections to the extent necessary for the aircraft to be wheeled forwardly. Support legs depend from each wing cover portion to support the cover sections above the aircraft.

3,823,520

STEEL STRUCTURE FOR PREFABRICATED BUILDINGS

Kazuo Ohta, Tokyo, and Seiji Sawada, Kawasaki, both of Japan, assignors to Nippon Steel Corporation and Nihon Architects Engineer & Consultant Incorp., both of Tokyo, Japan

Continuation of Ser. No. 18,642, March 11, 1970, abandoned. This application Apr. 10, 1972, Ser. No. 242,862

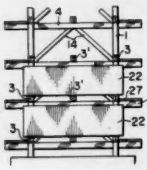
Claims priority, application Japan, Mar. 20, 1969, 44-20849

Int. Cl. E04h *1/04*

U.S. Cl. 52—73 5 Claims

A steel structure for prefabricated buildings which comprises a multiplicity of column-girder members formed by firmly combining steel columns, steel girders, and corridor board supporting girders and arranged in transversely juxtaposed and vertically connected relationship on a foundation, steel crossbeams connecting said column-girder members so as to define a multiplicity of framed space sections, and corridor boards securely installed at the front and rear of the

column-girder members. The framed space sections can be used for residential, public, traffic and other applications.



Prefabricated building units for living and other purposes can be adequately inserted into the framed space sections and removed therefrom for disassembly, movement, etc.

3,823,521

CONNECTING PART FOR SHAPED STRUCTURAL BODIES MADE FROM SYNTHETIC MATERIAL, ESPECIALLY FOR SHAPED STRUCTURAL BODIES OF FRAME-TYPE MAKE-UP

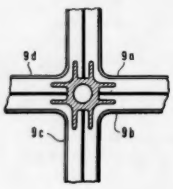
Jurgen Heitholt, and Werner Gieb, both of Herford, Germany, assignors to Richard Heinze, Herford, Germany

Claims priority, application Germany, May 8, 1974, 2122894

Filed May 8, 1972, Ser. No. 251,210

Int. Cl. E04b *1/48*

U.S. Cl. 52—285 **3 Claims**



A connecting part for shaped structural bodies, especially those formed of a synthetic material. In a preferred embodiment, each connecting part is formed of plastic material in the form of a substantially cylindrical base supporting a plurality of projections each of which extends parallel to the symmetrical axis of the base so that each projection can slide into a corresponding recess in a shaped structural body such as a synthetic building block.

3,823,522

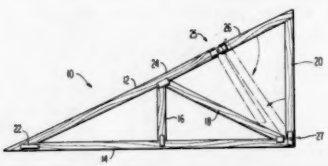
HINGED CONNECTOR PLATE

John Calvin Jureit, Coral Gables, Fla., and John Melvin Des Jardins, Columbiaville, Mich., assignors to Automated Building Components, Inc., Miami, Fla.

Filed Nov. 6, 1972, Ser. No. 303,939

Int. Cl. E04b *1/32, 7/16*

U.S. Cl. 52—641 **14 Claims**



The joint includes a pair of connector plates each having a plurality of teeth struck therefrom for embedment into the ends of wooden members forming a part of a truss or frame. The teeth are distributed over the major portion of the plates inset from end portions thereof. Openings are provided in the plate end portions. In one form hereof, the metal about the opening in one plate end is extruded through the opening in the end of the other plate whereby the extruded metal forms a bearing surface for pivoting the plates relative to one another. In another form, teeth are struck from marginal portions about the opening of one plate and received through the end opening in the other plate. These teeth are formed over to effect a bearing surface. Bolts or rivets may also be used to pivotally connect the plates one to the other.

3,823,523

CEILINGS FOR BUILDINGS

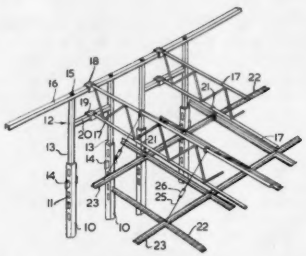
Anthony Russell Wells, Southport, England, assignor to S. Alderson Company Limited, Oxfordshire, England

Filed Dec. 11, 1972, Ser. No. 313,666

Claims priority, application Great Britain, Dec. 10, 1971, 57397/71

Int. Cl. E04b *1/24*

U.S. Cl. 52—648 **7 Claims**



A ceiling installation for a building comprises an assembly of uprights, which do not form an inherent part of the building structure, beams or girders carried by said uprights and a ceiling supported by said beams or girders. Conveniently the ceiling is suspended from the beams or girders. The uprights may also support wall lining panels and/or partitions for the building. The invention is particularly applicable to false ceilings for shops and offices.

3,823,524

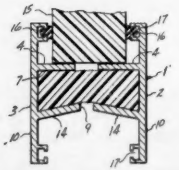
THERMAL BREAK TYPE ARCHITECTURAL EXTRUSIONS

Paul Weinstein, Wallingford, Conn., assignor to Swiss Aluminum Ltd., Chippis, Switzerland

Filed Jan. 12, 1973, Ser. No. 323,149

Int. Cl. E04c *3/29*

U.S. Cl. 52—729 **20 Claims**



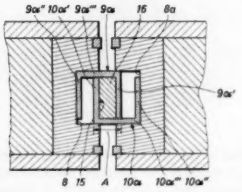
Metal extrusions adapted for use in building constructions including a rigid spacer member capable of forming a thermal break. The extrusions comprise spaced apart structural members having a unique web member spanning the space between

the structural members. The web member extends convexly between the structural members thereby providing an ideal surface for use in aligning the extrusions during processing. The extrusions also include flange members which with the structural members and the web member define a cavity within which the rigid spacer member of low thermal conductivity is constrained. A process of forming the extrusions is also claimed.

3,823,525
FOAM-TIGHTENED EDGE JOINT FOR STRUCTURAL PANELS

Peer Bruun, Strandvejen 151, 3060 Espergaerde, Denmark

Filed Apr. 30, 1971, Ser. No. 138,963
Claims priority, application Denmark, May 17, 1970, 2213/70
Int. Cl. F16b *5/01*
U.S. Cl. 52—758 D **1 Claim**

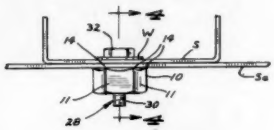


A joint for connecting two "sandwich" building elements. Each element has a locking rail on one end. The rails are in engagement with each other and have such form that they, when arranged, define one or more locking cavities. The more the rails overlap each other the larger is the cavity or cavities. In the cavity there is arranged an expanded foam body ensuring that the cavity will be as big as possible and will be filled up. This involves that the rails will overlap and cooperate efficiently so that the joint will be very tight.

3,823,526
FASTENING DEVICE

Rolland H. Rose, 2527 Midway Rd., Duluth, Minn. 55810

Filed Sept. 15, 1972, Ser. No. 289,426
Int. Cl. F16b *5/02*
U.S. Cl. 52—758 F **3 Claims**

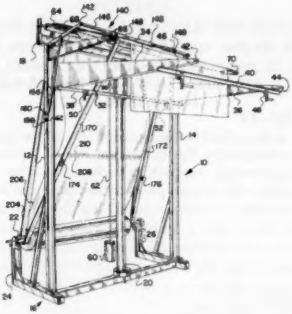


A device for fastening two pieces of material together including a threaded base member having a concave recess in one end and at least one projection for engaging a surface of a member to be connected together with a threaded connecting member and a threaded draw-up plug for threaded engagement with the base member and having a flared portion extending therefrom together with means for drawing up the draw-up plug upon the base member to force a portion of a piece of flat stock into the recess and cause the projection to engage the piece of stock with the connecting member threadedly engaged with the draw-up plug.

3,823,527
APPARATUS FOR COVERING A PALLET LOAD WITH PLASTIC FILM

Joseph Burn, Wyckoff, N.J., assignor to J. & H. Company, Paterson, N.J.

Filed Nov. 13, 1972, Ser. No. 306,007
Int. Cl. B65b *43/04*
U.S. Cl. 53—183 **5 Claims**

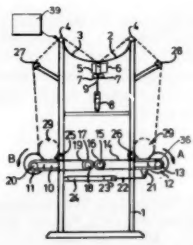


Apparatus is provided for covering a pallet load with a tubular sheet of wrapping material, such as plastic film, which apparatus includes a frame, a vertically sliding support structure mounted on the frame, a plurality of holding means, such as clamps, for grasping wrapping material, carried by the support structure, each of the holding means being movable between open and closed positions, and operating means for moving the holding means from a closed to an open position, when the holding means reaches a predetermined position with respect to the loaded pallet. In one embodiment, the support structure includes a vertically sliding member having a pair of spaced apart arms secured thereto, a pair of cross members movably secured to said spaced apart arms, and the holding means is movably secured to the cross members. Thus, by adjusting the position of the cross members along the spaced apart arms and adjusting the position of the holding means along the cross members, the apparatus can accommodate substantially any size pallet load.

3,823,528
DEVICE FOR PACKING IN FOIL A BUNCH OF ELONGATED OBJECTS

Wilhelmus Henricus Janssen, Scheepvaartweg 3, Roermond, Netherlands

Filed Jan. 19, 1973, Ser. No. 324,961
Int. Cl. B65b *13/04, 11/50, 53/06*
U.S. Cl. 53—198 R **17 Claims**



A device for packing a bunch of elongated objects, such as flowers, in a tight foil wrapping. The device having two foil

strips feeding to a supporting member from two foil feed rollers. The supporting member receives the foil strips, permits joining of the ends, supports the bunch of objects and then opens, permitting the foil and bunch of objects to sink down. The supporting member then closes and foil rollers rotate in the opposite direction bringing the foil tightly around the bunch of objects, joins the strips together and cuts the wrapped bunch free from the strips.

3,823,529

PROCESS FOR SEPARATING CARBON MONOXIDE

Robert D. Hughes, and Edward F. Steigelmann, both of Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Feb. 23, 1973, Ser. No. 335,000

Int. Cl. B01d *53/22*

U.S. Cl. 55—16 **6 Claims**

There is described the separation of carbon monoxide from gaseous mixtures by the combined use of liquid barrier permeation and metal complexing techniques. The liquid barrier is in contact with a semi-permeable film membrane, and the barrier contains complex-forming metal ions in aqueous solution. The metal ions may be, for example, cuprous or other metal ions, and mixtures of these metal ions, with or without other cations, may be used. The separation of carbon monoxide from lower alkanes, e.g., ethane and methane, or hydrogen is of particular interest.

3,823,530

METHOD AND APPARATUS FOR SEPARATING AND COLLECTING FINE PARTICLES IN GAS WITH STREAM OF FALLING MOLTEN METAL DROPS

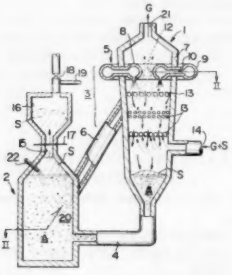
Tsuneo Miyashita, and Leon Michel Chaussy, both of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 316,003

Claims priority, application Japan, Dec. 24, 1971, 46-01730

Int. Cl. B01d *53/14*

U.S. Cl. 55—72 **7 Claims**



A method and apparatus for separating fine particles such as soot contained in hot gases, in which the gas is passed upward countercurrently to contact with the descending molten metal drops, whereby fine particles contained in the gas are attached to the falling molten metal drops and are thus separated from the gas.

3,823,531

GAS CLEANER

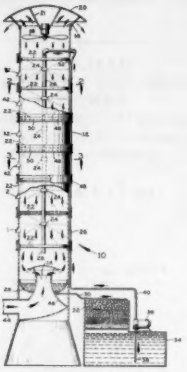
James A. Crawley, 925 N. 26th Ave., Hollywood, Fla. 33020

Filed Aug. 15, 1972, Ser. No. 280,826

Int. Cl. B01d *47/06*

U.S. Cl. 55—233 **3 Claims**

Apparatus for cleaning and quenching a hot gas stream contaminated with solids. The apparatus includes a gas flow duct, a plurality of porous filter elements arranged in series along the duct between a gas inlet and a gas outlet, and a plurality of liquid discharge heads in the duct for respectively discharging a washing liquid onto each of the filter elements for removal of solids from the gas in passing through the filter elements. A suction blower draws gas contaminated with solids through the duct and the filter elements and forces the gas out through



the gas outlet. The gas washing liquid drains to an external filter and is collected and pumped back to the discharge heads for recirculating the washing liquid. A plurality of inlets are provided in the duct for supplying environmental air into the duct by suction of the blower so that the air can be cleaned by passage through the filter elements.

3,823,532

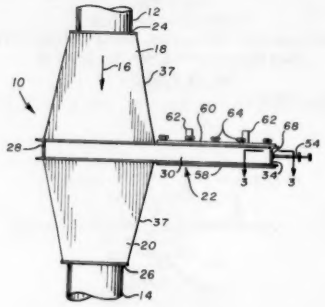
FILTER

Thomas Henry Cooper, Windsor, and Fred Bowman Heil, Jr., E. Hartland, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 14, 1973, Ser. No. 415,707

Int. Cl. B01d *35/12*

U.S. Cl. 55—357 **9 Claims**



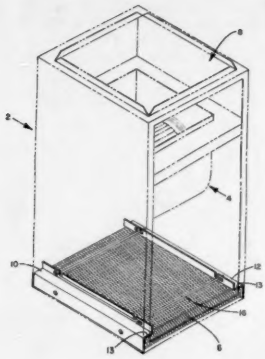
A filter for use in an air or other suitable gas duct system. The filter is mounted in a frame box which in turn is slidably supported in tracks within a rectangular section of the duct. An extension of the rectangular flow passageway provides a chamber into which the frame and filter may be slidably withdrawn from the duct. This chamber is provided with a removable cover to provide access to the filter for removal and replacement thereof. A further embodiment includes a tandem frame assembly and a second chamber for filter removal extending from the opposing side of the flow passageway section.

3,823,533

AIR FILTER RETAINER

Robert L. Alverson, Indianapolis, and Howard W. Morris, Zionsville, both of Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 27, 1973, Ser. No. 401,517
Int. Cl. B01d *27/08*
U.S. Cl. 55—493 3 Claims



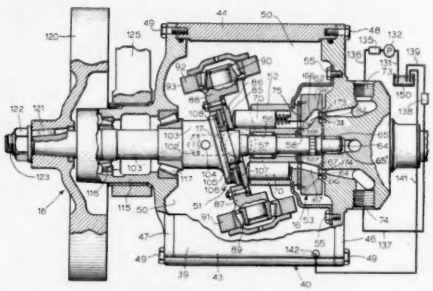
A retaining bracket for use in holding filter material in a furnace or the like having a U-shaped rod biased into a pair of L-shaped openings in brackets spanning the filter.

3,823,534

SICKLE BAR MOWER AND DRIVE THEREFOR

James H. Bornzin, La Grange, and William C. Swanson, Clarendon Hills, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 16, 1973, Ser. No. 333,421
Int. Cl. A01d *55/02*
U.S. Cl. 56—296 13 Claims



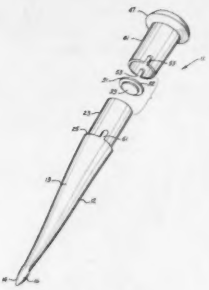
For a mower of the reciprocating type, a drive which converts rotary motion to an oscillating motion for reciprocating the mower sickle. The drive incorporates a swash plate which is pivoted on a horizontal axis to the upper end of a yoke; the lower end of which is connected through an arm to the sickle. The swash plate is driven by axially extending and retracting pistons of a hydraulic motor. The motor is capable of running the sickle at infinite speeds and the loads generated due to change of direction of the sickle at each end of its stroke are in part modulated by the hydraulic system.

3,823,535

ROPE SPLICING FID

James D. McGrew, 555 Capitol Mall Suite 1015, Elverta, Calif. 95814

Filed Apr. 9, 1973, Ser. No. 349,200
Int. Cl. B65h *69/06*
U.S. Cl. 57—23 4 Claims



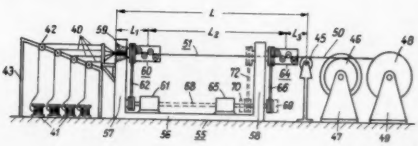
A fid for splicing rope, or line, as it is often called, comprises three parts. One part is a hollow tapered spike with a spade-shaped point to separate and spread apart the strands of the rope to be spliced. A removable stopper, or closure cap, the second part of the fid, seals the open end of the hollow spike, the hollow, sealed interior chamber affording positive buoyancy to the spike as well as providing a convenient storage receptacle for small articles, such as sailmakers' needles, and the like. The third part of the fid is a detachable tubular handle, or sleeve, which fits on the after end of the spike so that as the spike emerges from the separated and spread-apart rope strands, and is detached from the sleeve, the sleeve remains in place between the opened strands and affords an unobstructed conduit for the introduction of a tuck strand through the opened rope strands.

3,823,536

METHOD OF TWISTING ELEMENTS TO FORM AN ELECTRICAL CABLE HAVING A TWIST WHOSE DIRECTION ALTERNATES FROM SECTION TO SECTION

Dieter Vogelsberg, ImEichengrund 28, 1 Berlin 13, and Gunter Stricker, Falkenseer Chaussee 246, 1 Berlin 20, Germany

Filed June 21, 1973, Ser. No. 372,340
Claims priority, application Germany, June 22, 1972, 2230972; June 22, 1972, 2230973
Int. Cl. H01b *13/04*; D07b *3/02*
U.S. Cl. 57—34 AT 10 Claims



A method of twisting cable elements to form a cable unit which has a twist which alternates from section to section in which the cable being twisted is held in a stretched manner between two twisting heads one arranged immediately behind a first twisting point and the second one immediately in front of a second twisting point, the twisting heads being rotated at a speed which can be varied with respect to each other to obtain variations in twist direction.

3,823,537

AUTOMATIC DOFFING PROCESS AND APPARATUS FOR TEXTILE MACHINES

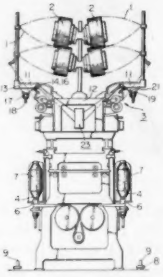
Tohru Uraya; Hiroshi Kato, both of Kobe; Hajimu Imai, Kyoto; Burou Suganuma, Kyoto; Masao Uehara, Kyoto, and Yasuaki Samura, Kyoto, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha; Murato Machinery, Ltd., both of Tsutsumidori-chome, Sumida-ku and Kisshoin Ochiaicho, Minami-ku, Kyto-shi, all of, Japan

Filed Dec. 27, 1971, Ser. No. 212,093

Claims priority, application Japan, Dec. 28, 1970, 45-126936

Int. Cl. D01h 9/04, 9/16

U.S. Cl. 57—52 12 Claims



On textile machines of the simultaneous doffing and/or donning type, full bobbins on spindles are simultaneously replaced by bare bobbins at stand-by positions in front of the spindles by utilizing the movement of an elongated beam for transportation of bobbins via chucks hung thereto, which beam rests outside the range of movement of a travelling member such as an automatic yarn knotter during the non-working cycle, along preselected courses while positively guiding the bobbins by a pilot mechanism away from any contact with surrounding machine parts.

3,823,538

RECIPROCATING LIFTING MECHANISM FOR THE GRIPPER-RAIL IN AN AUTOMATIC SPOOL CHANGE INSTALLATION OF SPINNING, TWISTING AND THE LIKE TYPE MACHINES

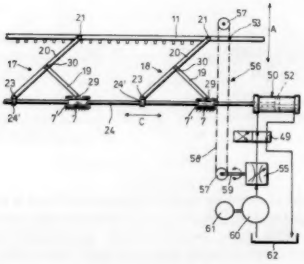
Wolfgang Igel, Ebersbach, Germany, assignor to Zinser-Textilmaschinen GmbH, Ebersbach, Germany

Filed Apr. 17, 1973, Ser. No. 351,976

Claims priority, application Germany, Apr. 17, 1972, 22185804

Int. Cl. D01h 9/04

U.S. Cl. 57—52 13 Claims



An improved reciprocating lifting mechanism for raising and lowering a gripper-rail within an automatic spool changing installation for spinning, twisting and the like type machines which includes at least two substantially identical, equal-sided rectilinear guidance linkage systems, a driving mechanism for moving the gripper-rail through the linkage systems, and structure for the automatic predetermined variation of the regulating velocity of the driving mechanism during the lifting strokes of the gripper-rail.

3,823,539

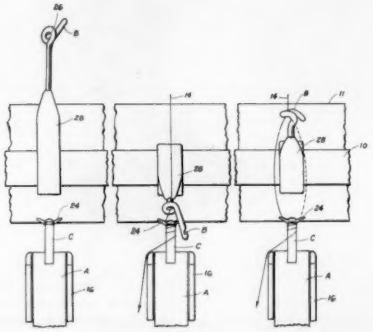
YARN SPINNING APPARATUS

Douglas G. Hart, 117 Knollwood Ln., Greenville, S.C. 29607

Filed Jan. 2, 1973, Ser. No. 320,281

Int. Cl. D01h 7/18, 13/04

U.S. Cl. 57—73 11 Claims



A yarn spinning or twisting machine including a rotary spindle having a bobbin thereon for accumulating yarn. A yarn engaging tip is carried by the spindle for engaging the yarn during the spinning or twisting operation to reduce tension in the yarn while also inserting false twist in the yarn below the nip of the front rollers. A yarn guide is provided for directing the yarn to the tip carried on the spindle. The yarn guide is manipulated to various positions during doffing, threading-up, and running of the yarn.

3,823,540

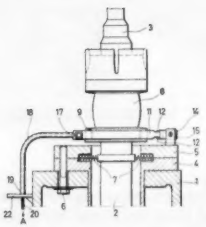
BRAKE FOR SPINNING AND TWISTING SPINDLES

Gerhard Mandl, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Sept. 13, 1972, Ser. No. 288,481

Int. Cl. D01h 7/22

U.S. Cl. 57—88 6 Claims



The clamping show is resiliently connected to the housing to move radially on the spindle upon braking of the elastically supported spindle by means of the brake elements on the shoe. The resilient connection can be formed by reduced portions in the arms of the shoe or by a spring member or one or more springs between the shoe and the housing.

3,823,541

EFFECT VOLUMINOUS YARN

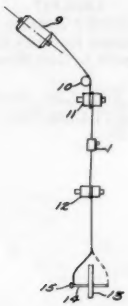
Michel Buzano, Villeurbanne, France, assignor to Societe Rhodiaceta, Paris, France

Filed Oct. 20, 1971, Ser. No. 191,115

Claims priority, application France, Oct. 22, 1970, 70.38478; Oct. 22, 1970, 70.38479; Dec. 9, 1970, 70.44628

Int. Cl. D02g *3/24, 3/34*

U.S. Cl. 57—144 11 Claims



A high bulk multifilament textured yarn is disclosed, and process and nozzle for manufacturing same. The yarn has alternating compact zones and open zones with the specific volume of the open zones being at least twice that of the compact zones, the open zones being substantially of oblong form with at least a portion of the filaments thereof being distributed in a random manner in the interior of said open zones and entangled therein. The yarn is produced by passing at least one effect yarn through a turbulence chamber under substantially no tension, with the yarn being fed substantially axially to said turbulence chamber by way of a cylindrical conduit having a smaller cross-sectional area than said turbulence chamber. The yarn of this invention may be used to make woven or knitted goods and is suitable for use in hosiery.

3,823,542

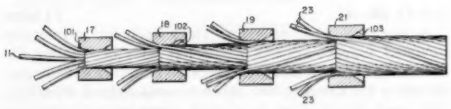
METHOD OF MAKING COMPACT CONDUCTOR

Denver L. Pemberton, Fairmount, Ind., assignor to The Anaconda Company, New York, N.Y.

Division of Ser. No. 244,083, April 14, 1972, Pat. No. 3,760,093. This application May 24, 1973, Ser. No. 363,683

Int. Cl. D02j *1/00*

U.S. Cl. 57—161 2 Claims



Improved electrical conductor is formed by compacting concentric conductors which have outside wires with gages at least equal to the gages of the inside wires. Such a conductor with 37 or more wires may have the outer layer only made up of square wires.

3,823,543

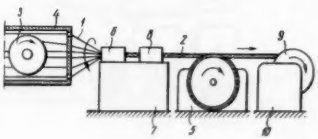
METHOD OF MAKING SPUN MULTI-WIRE ARTICLES

Mikhail Fedorovich Glushko, prospekt Shevchenko, 15/5, kv.17; Viktor Klimentievich Skalatsky, prospekt Gagarina, 2, kv.21; Emmanuil Filippovich Anastasiadi, ulitsa Schepkina, 17, kv.2, and Jury Lvovich Davydov, ulitsa K. Libknekhta, 43, kv. 19, all of Odessa, U.S.S.R.

Filed Feb. 29, 1972, Ser. No. 230,321

Int. Cl. D07b *3/00*

U.S. Cl. 57—166 3 Claims



The method includes the steps of twisting at least some of the wires making up the article, so as to reduce these wires to the plastic-flow state; spinning all said wires of the article together and subsequently subjecting these wires to plastic-flow compression in the spun condition of the wires, by drawing them through a compressing device.

3,823,544

INTEGRATED DIURNAL TIDE AND TIME CLOCK

Arthur L. Torrence, Newtown, Conn., assignor to Mechtronics Corporation, Stamford, Conn.

Filed May 14, 1973, Ser. No. 360,297

Int. Cl. G04b *19/26, 19/02*

U.S. Cl. 58—3 5 Claims

An integrated diurnal tide and time clock is provided which includes dials showing both the time of high and low tide and also hours. It is operable by a means of a single, synchronous clock motor; and the pointers for the two dials are interconnected by a ratio-providing bead chain gear and tensioner that substantially eliminates normal gearing errors. An economical, but accurate, dual clock results.

3,823,545
ELECTRONIC WATCH

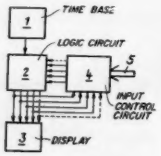
Eric Andrew Vittoz, Cernier-Neuchatal, and Claude Fonjallaz, Cormondreche-Neuchatel, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Filed Oct. 12, 1971, Ser. No. 187,961

Claims priority, application Switzerland, Oct. 20, 1970, 15464/70

Int. Cl. G04c *3/00*; **G04b** *19/30, 27/00*

U.S. Cl. 58—23 R **3 Claims**



An electronic watch, which includes a time base, a logic circuit and an electronic display, comprises a data input device including at least one manual control member for transferring data, e.g. a numerical value or a numerically coded instruction, into the logic circuit by means of a logic transfer circuit.

For example, any of 60 different data of any kind may be introduced into the logic circuit by means of a single push button. A number between 0 and 59 is attributed to each of these data. Any of these data is introduced by pushing the button where the corresponding number is displayed by the seconds display.

Alternatively, a number indicated on a separate display by means of a separate counter can be selectively transferred into any part of the time counter to thereby set the time. The number indicated can be transferred into any digit of a register part of an auxiliary calculator included in the logic circuits to thereby introduce the number to be processed. Alternatively, an indication of a first unit of time (e.g. seconds) can be transferred to replace and thereby correct an indication of a second unit of time (e.g. hours), a supplementary impulse generator selectively accelerating the sequential indication of seconds.

3,823,546
CRYSTAL-CONTROLLED DIGITAL CLOCK

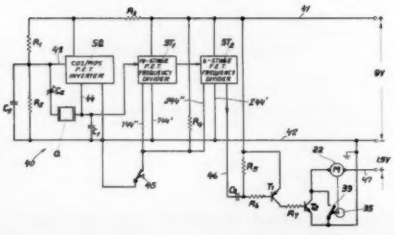
Bernd Gortz, Erlangen near Nurnberg, and Wolfgang Fehrenbacher, St. Georgen, both of Germany, assignors to Kundo Kieninger & Oberfell, St. Georgen, Germany

Filed Mar. 16, 1972, Ser. No. 235,196

Claims priority, application Germany, Mar. 16, 1971, 2112691; Mar. 6, 1972, 2210700

Int. Cl. G04b *1/00*

U.S. Cl. 58—23 R **23 Claims**



A clock with coaxial digit wheels for one-minute, ten-minute and hour indications has a drive motor intermittently energized by an electronic switch constituting the final stage of a 20-stage binary frequency divider which is stepped, at a frequency of $2^{20}/60$ Hz, by a crystal-controlled oscillator. The latter consists essentially of a dual-FET inverter of MOS type connected across a quartz crystal, similar inverters being used for the several stages of the frequency divider. A holding button or key may be manually operated to apply a zero-setting potential to all the stages for arresting the clock until the actual time matches its reading. The motor, with associated homing contacts, and its battery-operated driving circuit may be mounted as a detachable unit on the clock housing.

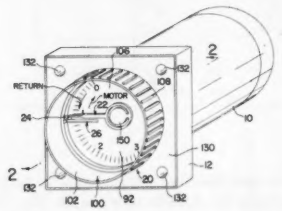
3,823,547
RESET TIMER

Harold D. Hulterstrum, and Frederick E. Morey, III, both of Baraboo, Wis., assignors to Gulf Western Industries, Inc., New York, N.Y.

Filed Feb. 7, 1973, Ser. No. 330,329

Int. Cl. G04b *29/00*

U.S. Cl. 58—39.5 **4 Claims**



In a timer comprising a dial, a progress pointer rotatably mounted about an axis generally perpendicular to the dial, a first manually adjustable stop means for limiting movement of the progress pointer in a first direction, spring means for driving the pointer in the first direction, and selectively actuable means for driving the pointer in a second direction opposite to the first direction, there is provided an improvement in the manually adjustable stop means. This improvement is a generally circular element having a periphery and a mounting element having a periphery, whereby the peripheries combine to form a generally cylindrical joint concentric with the axis. The circular element carries an abutment means for limiting movement of the pointer and the peripheral joint is spaced outwardly a substantial distance from the axis so that the dial and pointer may be easily viewed without obstruction. In addition, there is provided an improved progress counter having a means adjacent its hub for absorbing energy during impact of the pointer with the movable abutment.

3,823,548
UNIVERSAL TIME PROVIDING CLOCK

Morris Riba, 2881 W. 12th St., Brooklyn, N.Y. 11224

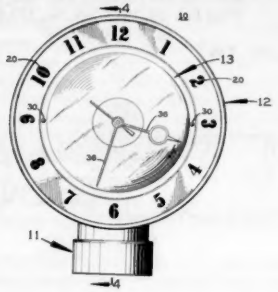
Filed Oct. 16, 1972, Ser. No. 298,066

Int. Cl. G04b *45/04*

U.S. Cl. 58—44 **7 Claims**

A universal time providing clock includes a rotatably mounted support annulus which has hour designating numerals on opposite faces, and a clock body is rotatably supported in the annulus. The clock body includes a front face with clock hands driven by a clock motor located within the clock body. On the rear face of the clock body there are mounted a pair of concentric hemispherical shells which are rotatable about a central axis perpendicular to the clock face and the inner and outer shell peripheries drive embrace rotatable rollers so that rotation of the outer shell rotates the inner shell in an opposite direction. The outer shell is transparent and is regularly divided into twelve numbered time zone segments and the inner shell is provided with time zone

designating indicia. Centrally rotatably mounted on the outer shell is a disc carrying regularly spaced numbers from 1 to 12



along its border. By manipulation of the outer shell and the disc the time in any time zone and its relative day and P.M., A.M. relationship to local time can be determined.

3,823,549

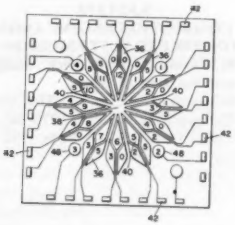
ELECTRONICALLY ACTUATED LIQUID CRYSTAL WATCHFACE WITH CONVENTIONAL TIME FORMAT

Bernard Feldman, Goleta, Calif., assignor to Transparent Conductors, Inc., Goleta, Calif.

Filed Mar. 8, 1973, Ser. No. 339,340

Int. Cl. G04b *19/06, 19/30*

U.S. Cl. 58—50 R **20 Claims**



An electronic watch having a liquid crystal display and presenting time information in a substantially conventional format of hour and minute hands. A set of 12 hour and minute hands in a nested relationship are provided as thin film transparent conductor patterns in the liquid crystl display and are electronically actuated to provide visible indication of time to the nearest 5 minutes. Additional liquid crystal conductor patterns are provided as interpolation elements to indicate each minute. A control logic system is provided for sequentially activating and setting the hands to a particular indication and for additionally providing calendar data employing the existing pattern of hands.

3,823,550

SOLID STATE WATCH DISPLAY SWITCH

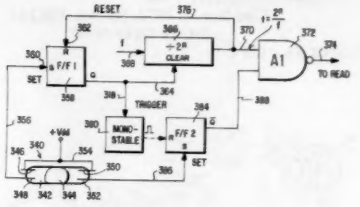
John M. Bergey, Lancaster, Pa., assignor to Time Computer, Inc.

Continuation-in-part of Ser. No. 217,765, Jan. 14, 1972, Pat. No. 3,742,699, which is a continuation-in-part of Ser. No. 138,557, April 29, 1971, Pat. No. 3,782,102. This application Apr. 25, 1973, Ser. No. 354,192

Int. Cl. G04b *19/30*

U.S. Cl. 58—50 R **7 Claims**

Disclosed is a solid state wristwatch with an electro-optical digital display of light-emitting diodes. Incorporated in the watch is a switch for actuating the display in response to a predetermined movement of the wearer's arm so that movement of the other hand or arm is not required and the other hand is left free for carrying packages or other uses.



3,823,551

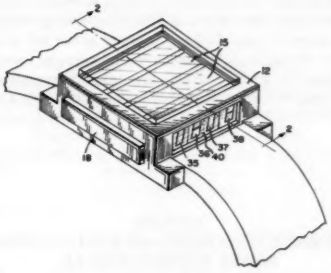
SOLID STATE ELECTRONIC TIMEPIECE

Roger W. Riehl, Troy, Ohio, assignor to Riehl Electronics Corporation, Troy, Ohio

Filed May 3, 1971, Ser. No. 139,468

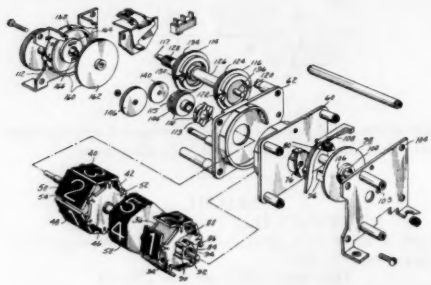
Int. Cl. G04c *3/00*; **G04b** *19/30*

U.S. Cl. 58—23 R **12 Claims**



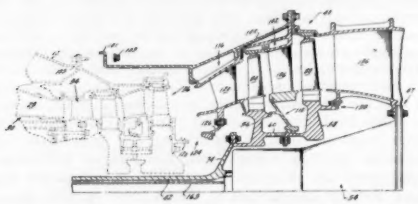
A wristwatch has a plurality of light emitting digital readout elements which are located along one end of the watch above the watchband. A hermetically sealed time capsule is enclosed within the watch case and includes an integrated circuit chip which divides the frequency output of a battery powered quartz crystal oscillator into a series of pulses which are counted and selectively interrogated to provide a series of electrical outputs corresponding to seconds, minutes, hours, days, months and years. The time capsule includes sealed control switches which are actuated by magnets slidably mounted on the case and which provide for selecting different outputs for visual display on the readout elements, corresponding to either hours and minutes, month and day or seconds. The electronic circuitry automatically compensates for twenty-eight, thirty and thirty-one day months as well as for leap years, and the readout may be selected for repetitive twelve hours or twenty-four hour display. When the twelve hour readout is selected, the AM/PM indicating light is energized when the hours and minutes readout is selected. A solar cell is positioned on the top surface of the watch case and functions to control the intensity of the readout elements according to the intensity of ambient light, as well as to recharge the batteries. The control switches also provide for setting the watch by either changing the minutes output while holding the seconds output at zero, or by changing the hours output without changing the minutes, seconds and days outputs, or by changing the days output without changing the second, minutes, hours and months outputs.

3,823,552
DIGITAL CLOCK
Robert L. Boyles, Wayland, Mass., assignor to General Electric Company, Bridgeport, Conn.
Filed Mar. 8, 1973, Ser. No. 339,213
Int. Cl. G04b 19/02
U.S. Cl. 58—125 C 10 Claims



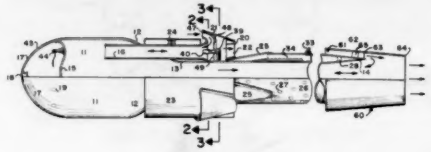
A digital clock wherein minutes, tens of minutes, and hours display indicators are rotated by a motor in order to bring successive numerals into position behind a viewing window 82. Geneva gears 113 and 115 are grouped at the left of the numerals for driving an hours drum 56 and a tens of minutes numeral drum 58, and the drums are uniquely supported with respect to each other so that they may be driven by a motor 8 which is located at the right of the numerals.

3,823,553
GAS TURBINE WITH REMOVABLE SELF CONTAINED POWER TURBINE MODULE
James Smith, Topsfield, Mass., assignor to General Electric Company, Lynn, Mass.
Filed Dec. 26, 1972, Ser. No. 318,280
Int. Cl. F02c 3/10
U.S. Cl. 60—39.16 R 8 Claims



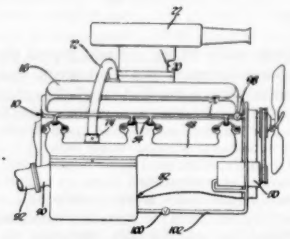
An aircraft gas turbine engine includes a power turbine module having a self-contained turbine, frame, bearings, sump and drive shaft all housed within a casing which is releasably connected to the engine such that the entire module including turbine, frame, bearings, sump and drive shaft may be readily removed and replaced by simply disconnecting the module casing from the engine. The entire operation may be accomplished without having to remove the engine from its associated aircraft.

3,823,554
HIGH SPEED VALVELESS RESONANT PULSE JET ENGINE
John Alden Melenric, 409 East Ln., Kerrville, Tex. 78028
Filed Feb. 20, 1973, Ser. No. 333,867
Int. Cl. F02k 7/04
U.S. Cl. 60—249 10 Claims



A valveless resonent pulse jet engine particularly adapted to power target vehicles or pilotless aircraft at speeds of Mach 0.5 to Mach 1. This invention is an improved high-speed adaptation of my U.S. Pat. No. 3,517,510. The device of this invention continues to utilize a substantially cylindrical combustion chamber, a reduction cone and an exhaust tube, a multiplicity of reverse flow air fuel inlet tubes projecting through the reduction cone into the combustion chamber. Annular reverse flow vanes surround the bell mouth of the air inlet tubes thereby increasing static pressure at the air inlet as forward speed of the vehicle increases. An exhaust tube diffuser is employed in a similar fashion to assist the pulsating reverse flow of ambient air into the exhaust tube to increase thrust at high forward speeds.

3,823,555
INTERNAL COMBUSTION ENGINE AND METHOD OF OPERATION FOR EXHAUST EMISSION CONTROL
Edward N. Cole, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 247,569, April 26, 1972, abandoned. This application Dec. 6, 1972, Ser. No. 312,567
Int. Cl. F02b 75/10; F01n 3/14
U.S. Cl. 60—274 7 Claims



A V-8 internal combustion engine with an inlet manifold disposed between the banks of cylinders and a pair of exhaust manifolds disposed outboard of the banks of cylinders has a converter unit containing reducing and oxidizing catalyst beds coupled to each exhaust manifold. During a warm-up mode, exhaust gases from both banks of cylinders pass through a heat exchange region beneath the inlet manifold and then enter the converter units and pass through the catalyst beds. Air injected at the exhaust ports during the warm-up mode supports oxidation of hydrocarbons and carbon monoxide, and the hot exhaust gases promote evaporation of fuel in the inlet manifold and heat the catalyst beds. After the warm-up mode, a converter mode is entered in which exhaust gases are

discharged from the exhaust manifolds directly into the converter units and pass through the catalyst beds. A reducing atmosphere provided in the first catalyst bed during the converter mode supports dissociation of oxides of nitrogen, and air injected between the catalyst beds provides an oxidizing atmosphere to support oxidation of hydrocarbons and carbon monoxide in the second catalyst bed. At high speeds or temperatures, a reactor mode is entered in which air injected at the exhaust ports supports oxidation of hydrocarbons and carbon monoxide in the exhaust manifolds and the exhaust gases then are discharged from the exhaust manifolds directly to the exhaust pipes to protect the catalyst beds.

3,823,556

CHANGE-OVER VALVE ASSEMBLY FOR A GAS PASSAGEWAY

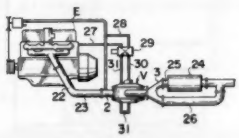
Kenji Goto, and Kiyohiko Mizuno, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Aichi-ken, Japan

Continuation of Ser. No. 253,268, May 15, 1972, abandoned. This application Aug. 2, 1973, Ser. No. 385,043

Claims priority, application Japan, May 19, 1971, 46-40429

Int. Cl. F01n *3/14*; **F02b** *75/10*

U.S. Cl. 60—288 **3 Claims**



This invention relates to a change-over valve assembly for a gas passageway.

Said valve assembly comprises a pair of openings formed in a valve casing in positions symmetrical with each other for selectively causing a gas inlet duct to communicate with one of two gas outlet ducts, a plurality of valve bodies firmly secured to opposite ends of a stem so that each may open and close one of said pair of openings, two diaphragm means disposed near opposite sides of the valve casing in positions symmetrical with each other and each comprising a diaphragm and having one of said valve bodies firmly secured to a middle portion of the respective diaphragm, a two-way valve adapted to cause two diaphragm chambers of said two diaphragm means to communicate with a negative pressure source and a positive pressure source respectively, and a plurality of enlarged gas passage portions each formed between one of said pair of openings and the diaphragm of each said diaphragm means.

Said plurality of valve bodies are spaced apart from each other a distance greater than the distance between said pair of openings.

Said two diaphragm chambers each is defined by an outer cover of the valve casing and the respective diaphragm.

3,823,557

FLUID MOTOR

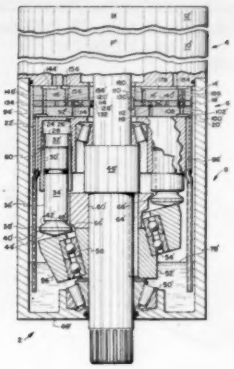
Norman L. Van Wagenen, 378 E. Truman Ave., Salt Lake City, Utah, and Ara Norman Lamph, 540 N. 200 East, Bountiful, Utah

Continuation-in-part of Ser. No. 740,414, May 23, 1968, which is a division of Ser. No. 607,428, Jan. 5, 1967, Pat. No. 3,420,059. This application Sept. 7, 1971, Ser. No. 178,028

Int. Cl. F16h *39/10*

U.S. Cl. 60—325 **25 Claims**

A fluid motor comprising a generally disc-shaped valve formed with a plurality of grooves and keyed for rotation with the output shaft to control distribution of fluid to and from a plurality of drive cylinders carrying pistons which drive a wobble plate to rotate the output shaft. A novel lock ring is disclosed for retaining the pistons in engagement with the wobble plate, together with a novel pump supply and lubrication system.



3,823,558

HYDROSTATIC TRANSMISSION

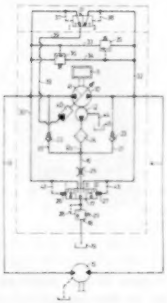
Egon Tittmann, Leonberg, and Werner Romeisch, Gerlingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 15, 1973, Ser. No. 341,609

Claims priority, application Germany, Mar. 17, 1972, 2218472

Int. Cl. F15b *21/04*

U.S. Cl. 60—329 **10 Claims**



A driven main pump drives a hydraulic motor through high pressure and low pressure conduits, while a feed pump supplies pressure fluid through a check valve to the low pressure conduit. A control conduit connects the feed pump with a pressure maintaining valve opening into a low pressure container, and includes a shiftable control valve operated by fluid from the high pressure conduit, but connecting in all positions the feed pump with the pressure maintaining valve. In the control conduit portion between the control valve and the feed pump, a throttle is provided whose pressure differential is greater than the pressure differential of the check valve between the feed pump and the low pressure conduit.

3,823,559

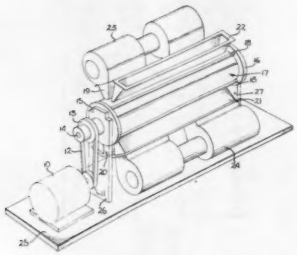
HEAT EXCHANGING APPARATUS

Claude H. Foret, 10015 Culver Blvd., Culver City, Calif. 90230

Continuation-in-part of Ser. No. 316,663, Dec. 20, 1972, abandoned. This application May 29, 1973, Ser. No. 364,680

Int. Cl. F03g 7/06

U.S. Cl. 60—508 21 Claims



A flexible vane rotor eccentrically rotates within a stator cavity to operate as a compressor and expander of a sealed working gas. The rotation of the eccentrically mounted rotor having circumferentially secured flexible vanes alteratiely compresses and expands the internally sealed working gas to cause a heat transfer to and from the respective portions of the apparatus.

3,823,560

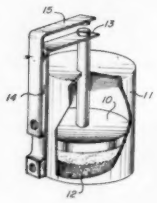
METHOD AND APPARATUS FOR OBTAINING ENERGY FROM TEMPERATURE CHANGES

Ralph H. Hansen, Short Hills, N.J., assignor to J. P. Stevens & Co., Inc., New York, N.Y.

Filed Aug. 7, 1969, Ser. No. 848,276

Int. Cl. F03g 7/06

U.S. Cl. 60—527 6 Claims



This invention relates to the conversion of temperature changes into energy. In the present invention, there is confined within a sealed chamber a temperature responsive composition comprising a gas and a solvent, which in the liquid state, dissolves a greater amount of the gas than when said solvent is in the solid state. The amount of gas in said composition is greater than the amount of gas which can be dissolved by the solvent in the chamber when said solvent is in the solid state. Converting the solvent from a liquid to a solid, thus results in the expulsion of gas from the solvent, thereby increasing the pressure within said chamber, while converting the solvent from a solid to a liquid results in gas being dissolved by the solvent, causing a decrease in the pressure within said chamber. Useful energy is obtained from these pressure changes. Preferably, there is associated with said chamber at least one element which is either physically moved or which generates an electric current in response to pressure changes within said chamber. Such physical movements or electric currents can be used for many purposes, such as the control of temperature sensitive switches and valves.

3,823,561

HYDRAULIC DRIVING UNIT FOR WINDSHIELD WIPERS IN MOTOR VEHICLES

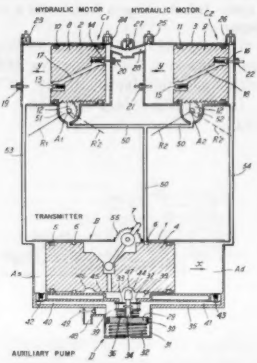
Bruno Zoppi, Milan, Italy, assignor to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy

Filed May 9, 1972, Ser. No. 251,769

Claims priority, application Italy, May 11, 1971, 24342/71

Int. Cl. F15b 7/00

U.S. Cl. 60—592 9 Claims



A hydraulic driving unit for windshield wipers comprising a transmitter having a double-acting piston with chambers at opposite ends thereof adapted to convey to corresponding chambers of two series connected motors, quantities of liquid which are greater than the quantities of liquid in the corresponding chambers of the motors. Each motor is connected by a rack and pinion device to a respective windshield wiper. The pistons in the motors are provided with passageways connecting the opposite end chambers and valves are contained in the passageways for being respectively opened to control the flow of excess liquid from one chamber to the other when the pistons have reached their end of stroke positions. An auxiliary pump is connected to the transmitter for circulation of a leakage liquid from the transmitter or from the motors back to the chambers of the transmitter.

3,823,562

PROCESS OF PRODUCTION OF PILES, PILE PACKS, AND SUBTERRANEAN PILE WALLS

Milan Bacmanak, Bratislava, Czechoslovakia, assignor to Vyzkumny Ustav Inzinierskych Stavieb, Bratislava, Czechoslovakia

Filed Oct. 12, 1972, Ser. No. 296,803

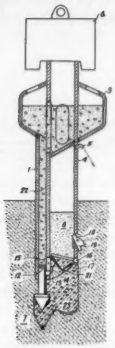
Claims priority, application Czechoslovakia, Oct. 26, 1971, 7503-71

Int. Cl. E02d 5/18, 5/38, 11/00

U.S. Cl. 61—35 4 Claims

Piles or subterranean pile walls are produced by using a pack of parallel tubes, composed of filling tubes closed at the bottom and of collecting tubes open at the bottom, which pack of tubes is driven into the earth, the filling tubes displac-

ing the earth to the side and later being filled with concrete. The collecting tubes collect a part of the earth, thereby



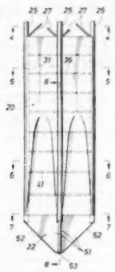
enabling its removal, the amount of removed earth being adjusted by pressure air acting on top of the earth cores in the collecting tubes.

3,823,563

SPUD TANK FOR OFFSHORE DRILLING UNIT

Peter M. Lovie, Houston, Tex., assignor to Engineering Technology Analysts, Inc., Houston, Tex.

Filed Sept. 5, 1972, Ser. No. 286,162
Int. Cl. E02b *17/00*; **E02d** *5/72*
U.S. Cl. 61—46.5 **20 Claims**



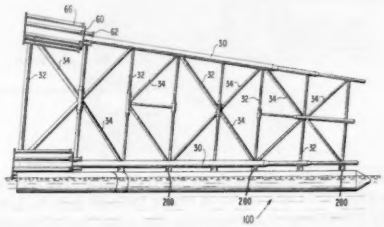
A spud tank for attachment to at least one of the legs of an offshore drilling unit having a work platform and a plurality of legs depending therefrom for supporting the drilling unit on the floor of a body of water. The spud tank may comprise an elongated body section and a tip section depending downwardly from the body section. The uppermost portion of the body section may be provided with a polygonal cross section, the lowermost portion having a substantially star-shaped cross section of a relatively smaller area. The sides of the polygonal cross section may be connected to the sides of the star-shaped cross section by nonplanar walls. The tip section may comprise a plurality of radial blade members, the outer edges of which are tapered downwardly and inwardly from the points of the star-shaped body cross section, converging together in a pointed tip.

3,823,564

METHOD AND APPARATUS FOR TRANSPORTING AND LAUNCHING AN OFFSHORE TOWER

Jesse W. Crout; Albert M. Koehler, and Larry K. Shaw, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Feb. 27, 1973, Ser. No. 336,276
Int. Cl. E02b *17/02*; **B63b** *35/40*
U.S. Cl. 61—46.5 **30 Claims**



A method and apparatus for transporting and launching an offshore tower. The apparatus according to the invention comprises a watertight buoyancy means for supporting an offshore tower in a generally horizontal transporting posture substantially above the surface of the body of water and subsequently controllably righting the offshore tower onto the bed of the body of water at a preselected marine site. The buoyancy means is connected along the lateral extent of the offshore tower by a plurality of spaced connecting assemblies. The watertight buoyancy means is interiorly compartmented with bulkheads to facilitate buoyancy control and righting of the offshore tower within the body of water. The lowermost connecting assembly between the offshore tower and the buoyancy means consists of at least one pivotal assembly so that the buoyancy means may be controllably pivoted away from the offshore tower following a righting operation.

One specific embodiment of the transport and launch apparatus includes first and second tubular, selectively variable, buoyancy members. Each buoyancy member includes a unitary tubular section and a bifurated tubular section connected to one end thereof. Clamping assemblies are provided along the lateral extent of the first and second tubular buoyancy members for releasably connecting the buoyancy members to the lateral face of an offshore tower. The bifurcated tubular sections may each be provided with transversely extending bridges for supporting pivotal connection assemblies for pivotally connecting a base portion of the transport and launch apparatus to a base portion of the offshore tower.

The method of transporting and launching an offshore tower according to the invention comprises the steps of floating an offshore tower to a preselected marine site upon a tubular buoyancy means, controllably righting the offshore tower within a body of water, lowering the offshore tower onto the water bed and releasing the tubular buoyancy means from a lateral surface of the offshore tower by pivoting the buoyancy means away from the offshore tower about a pivotal connection at the base of the offshore tower. The tubular buoyancy means is then refloated and transported back to an offshore tower fabrication yard for subsequent reuse.

3,823,565

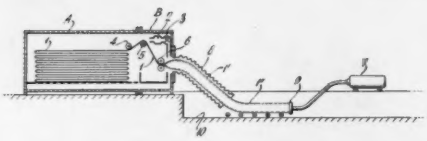
METHOD AND APPARATUS FOR LAYING THERMOPLASTIC PIPE

Takezo Takada, Hikone, Japan, assignor to Takata Kojyo Co., Ltd., Tokyo, Japan

Filed June 29, 1973, Ser. No. 374,845
Int. Cl. F16l *1/00*; **E04b** *1/16*
U.S. Cl. 61—72.1 **18 Claims**

An elongated pipe formed of a normally rigid thermoplastic synthetic organic resin is packaged in a collapsed lay flat con-

dition and in a multilayer state in a heat insulated receptacle having a discharge opening. A chamber is separably coupled to and communicates with the receptacle and houses an air heater, a blower for circulating the hot air through the receptacle and a pair of squeeze rolls for withdrawing and discharg-



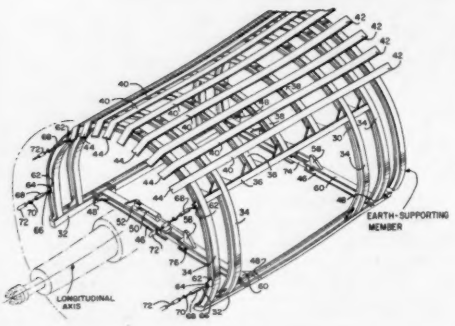
ing heated softened pipe from the receptacle. The pipe is led by a guide tube into a trench where the pipe is to be laid and an air compressor is connected to the distal end of the pipe to expand the softened discharged pipe, and the laid pipe is cooled to harden it to a rigid state.

3,823,566

EARTH-SUPPORTING APPARATUS AND METHOD

Howard J. Handewith, Seattle, Wash., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 18, 1972, Ser. No. 316,043
Int. Cl. E01g *3/00*
U.S. Cl. 61—85 **6 Claims**



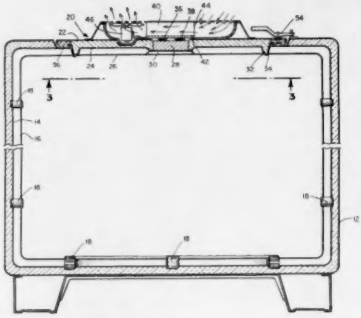
The apparatus comprises an open, circular frame, which is resiliently expansible and contractible, arranged for towing in accompaniment with a tunneler (or the like). Hydraulic cylinders coupled across telescopic transverse struts of the frame are operative to expand or contract the frame. The method, capable of practice by the apparatus, comprises the expansion of an open frame into engagement with the soft or friable earth of an earth bore overhead and the installation and fixing of an earth-supporting member therewithin. Thereafter, the frame is moved out, and the member is fastened to the bore overhead.

3,823,567

THERMOELECTRIC-VACUUM SHIPPING CONTAINER

Louis J. Corini, Philadelphia, Pa., assignor to Melbro Corporation, Philadelphia, Pa.

Filed Apr. 5, 1973, Ser. No. 348,183
Int. Cl. F25b *21/02*
U.S. Cl. 62—3 **1 Claim**



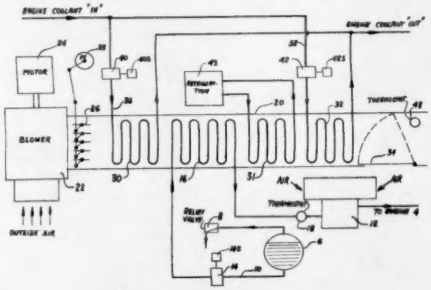
A container has an inner shell vacuum insulated from an insulated outer shell. A removable cap is provided with thermoelectric temperature control means actuated by a circuit which provides for reverse polarity for reversing heat flow. The thermoelectric means controls the temperature within the inner shell by making up the small heat transfer through the vacuum container construction.

3,823,568

METHOD AND APPARATUS FOR AIR CONDITIONING VEHICLES

Tadeusz M. Bijasiewicz, 123 Keifer Dr.; Howard S. Orr, 2080 Outlook Dr., both of Upper St. Clair Township, Pa. 15241, and Donald E. Vierling, 1016 Cochran Rd., Mt. Lebanon Township, Allegheny County, Pa. 15243

Filed Aug. 29, 1973, Ser. No. 392,800
Int. Cl. F25b *19/00*
U.S. Cl. 62—7 **9 Claims**



In land and water vehicles using cryogenic fuels the liquified fuel is heated and vaporized in an air conduit leading to the

passenger compartment of the vehicle. This is done by controlling the volume and temperature of the air delivered to that section of the air conduit containing the fuel. The evaporation of the fuel cools the air which is then fed into the passenger compartment to cool the compartment. In winter the air can be heated by the engine coolant to a degree sufficient to heat the passenger compartment.

3,823,569

CIRCULATION SYSTEM FOR LOW-TEMPERATURE FLUIDS

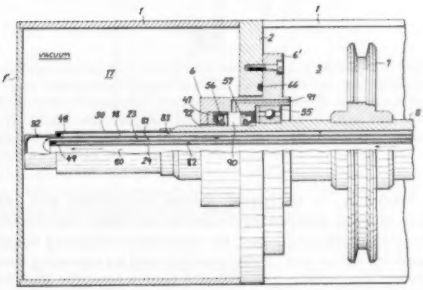
Alfons Sellmaier, deceased, late of Munich, Germany (by Anne-Rose Sellmaier, heir-at-law and legal guardian); Andreas Michael Sellmaier, Munich, Germany (heir-at-law); Alban Noppel, Munich, and Gunter Sippel, Hohenschaftlarn, both of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Nov. 13, 1972, Ser. No. 306,356

Claims priority, application Germany, Dec. 27, 1971, 2164823

Int. Cl. F17c *7/02*

U.S. Cl. 62—55 **10 Claims**



A low-temperature fluid, delivered by a stationary cooling plant to a rotating load, passes to and from the load by way of two coaxial ducts which are thermally shielded from each other and from the outside by vacuum spaces, these ducts and spaces being formed by four jointly rotating coaxially nested tubes. The return duct lies between the inner and the outer tube pair, the latter pair terminating at an outlet between two ball bearings respectively supporting the outer and the inner tube pair; the bearings are located in stationary journal boxes containing annular seals which elastically engage the outer tube of the respective pair, these seals being located in chambers maintained at near-ambient temperature by heat transfer through the metallic wall of the box. Between these journal boxes the tubes are surrounded by an outer jacket forming another vacuum space around them; the seal chamber of each box communicates with one of the fluid-circulating ducts through a narrow annular clearance formed between the outermost rotating tube and an enveloping fixed tube, this clearance being sandwiched between vacuum spaces and long enough to develop a low temperature gradient therealong. The pairs of rotating tubes are interconnected at one end by corrugated expansion joints allowing relative dimensional changes due to temperature variations.

3,823,570

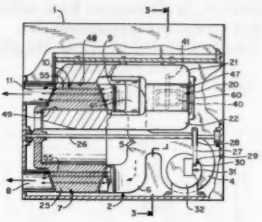
HEAT PUMP

Henry W. Wallace, 60 Oxford Dr., Freeport, N.Y. 11520

Filed Feb. 16, 1973, Ser. No. 333,206

Int. Cl. F25d

U.S. Cl. 62—56 **11 Claims**



Method and apparatus for utilizing for the purpose of heat flow by means of controlled temperature change a field energy, other than electric, magnetic or gravitational field energies, capable of reducing the specific heat properties of a broad class of substances.

3,823,571

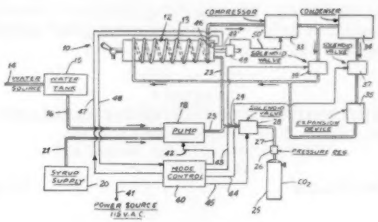
MACHINE FOR DISPENSING A SEMI-FROZEN CARBONATED BEVERAGE INCLUDING A SYSTEM FOR AUTOMATICALLY CONTROLLING THE QUALITY OF THE BEVERAGE THROUGH TIMED MODES

Dudley C. Smith; Jasper E. Hurley, both of Dallas, and John D. Harris, Garland, all of Tex., assignors to John E. Mitchell Company, Dallas, Tex.

Filed July 18, 1973, Ser. No. 380,150

Int. Cl. F25c *7/00*

U.S. Cl. 62—136 **10 Claims**



This invention relates to a machine for dispensing a semi-frozen carbonated beverage, and particularly such a machine including a system for automatically controlling the quality of the beverage through various timed modes. The machine includes a cooling chamber, means for delivering liquid ingredient to the chamber, means for delivering carbon dioxide gas to the chamber, and refrigeration means for maintaining the liquid ingredient in the chamber to within a prescribed viscosity and temperature range. The temperature and viscosity of the liquid ingredient and the pressure within the chamber are maintained within prescribed ranges during a first operating mode of the machine to produce a semi-frozen carbonated beverage upon dispensing the ingredients from the chamber. The automatic mode control of the machine controls the refrigeration means and liquid and gas delivering means such that during a first operating mode, said viscosity, temperature, and pressure ranges are maintained and delivery of both liquid and gas ingredients is allowed to the chamber, during a second

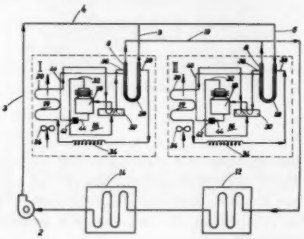
operating mode the liquid ingredient within the chamber is defrosted, and during a period of time between first operating modes the delivery of gas is allowed to the chamber and the supply of liquid ingredient to the chamber is shut off.

3,823,572

FREEZE PROTECTION DEVICE IN HEAT PUMP SYSTEM

Thomas L. Cochran, Jr., Davenport, Iowa, assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Aug. 15, 1973, Ser. No. 388,421
Int. Cl. F25b *13/00*
U.S. Cl. 62—160 **7 Claims**



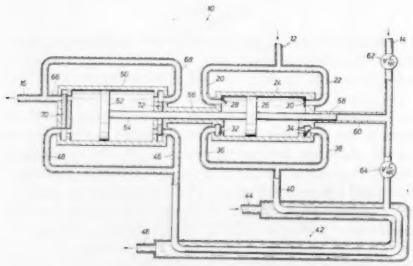
A water source heat pump system having a plurality of zone air conditioning units, each unit adapted for selectively heating or cooling a zone independent of other units, each air conditioning unit having an air-to-refrigerant heat exchanger, a water-to-refrigerant heat exchanger of the type having a water contact coil disposed within a housing, a refrigerant compressor, and refrigerant control means operable to selectively cause the air-to-refrigerant exchanger to act as a refrigerant evaporator or condenser and the water-to-refrigerant heat exchanger to act as a refrigerant condenser or evaporator, the water-to-refrigerant heat exchanger and the air-to-refrigerant heat exchanger utilizing thermostat control means to control the operation of the air conditioning unit so as to prevent freezing of water in the water-to-refrigerant heat exchanger during the heating cycle and prevent frosting or freezing of condensate on the air side of the air-to-refrigerant exchanger during the cooling cycle.

3,823,573

AUTOMOTIVE AIR CONDITIONING APPARATUS

Verl C. Cassady, Rt. 1, Box 15, Bourg, La. 70343

Filed Mar. 16, 1973, Ser. No. 342,189
Int. Cl. F25b *27/02*
U.S. Cl. 62—238 **8 Claims**



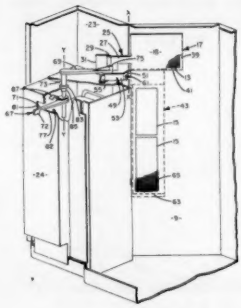
For use in an automotive air conditioning apparatus, a compressor device which functions with a typical condenser and evaporator wherein the gas from the evaporator is introduced to a double acting piston and cylinder arrangement exhausted by a check valved conduit which then delivers the refrigerant gas at an elevated pressure to a water jacket heat exchanger. Preferably, the heat exchanger utilized water in the cooling system of the vehicle. The refrigerant is then delivered to a double acting fluid pump motor which is connected to the first pump. The refrigerant which has been raised in enthalpy is introduced to the fluid pump motor which is connected by means of a piston rod to the pump previously mentioned. After energy is taken from the refrigerant by the fluid pump motor, it is then supplied by a conduit to a typical condenser for cooling to the liquid state for transfer to the evaporator to repeat the cooling cycle.

3,823,574

APPARATUS FOR OPENING EXHAUST AND VENT PORTS OF AN AIR CONDITIONING UNIT

Theodore S. Bolton, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 2, 1973, Ser. No. 356,658
Int. Cl. F25d *23/12*
U.S. Cl. 62—262 **8 Claims**



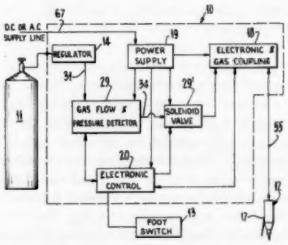
Apparatus for selectively opening the exhaust and vent ports in a wall between the condenser and evaporator sections of an air conditioning unit, the apparatus comprising hinged doors biased to port closing positions and an operating lever having an actuating arm extending from a rotatable shaft for selectively exerting torque on tabs extending from the doors to open the selected one of the doors.

3,823,575

CRYOGENIC APPARATUS

Jean-Marie Parel, Miami, Fla., assignor to The University of Melbourne, Parkville, Victoria, Australia

Filed June 7, 1971, Ser. No. 150,284
Int. Cl. F25b *19/00*
U.S. Cl. 62—514 **12 Claims**



A cryogenic apparatus is disclosed for use in biological sciences having automated controls and using the Joule-

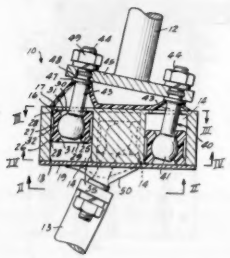
Thomson effect. A supply of gas flows to a control unit which includes a solenoid gas valve. If the gas pressure and flow rate are within acceptable limits, the valve will permit flow from the control unit to a probe to effect cooling of the probe by the Joule-Thomson effect.

3,823,576

UNIVERAL JOINT FOR VEHICLE STEERING COLUMN

John B. Colletti, Grosse Point Park, and Leonard J. Zukowski, Sterling Heights, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Aug. 22, 1972, Ser. No. 282,767
Int. Cl. F16d 3/00
U.S. Cl. 64—8 6 Claims



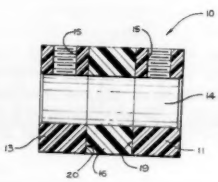
A Universal joint connection including a housing with four circular bores extending thereinto, the bores being formed at the corners of a square, the bores being closed at both ends by walls. Diagonally opposed bores having slots through one end wall on each side of the device, the bores having spool bearings therein, the bearings receiving ball ends of ball-ended studs, the shanks of which project through the slots whereby two studs project from each side of the unit. The shanks being attached to driving and driven column shafts.

3,823,577

FLEXIBLE COUPLING

Thomas R. Smith, Newton, Iowa, assignor to Pyramid, Inc., Newton, Iowa

Division of Ser. No. 113,259, Feb. 8, 1971, abandoned. This application Apr. 17, 1973, Ser. No. 352,041
Int. Cl. F16d 3/17
U.S. Cl. 64—11 R 2 Claims



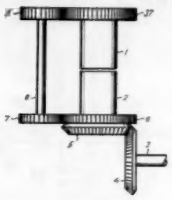
A flexible coupling including a flexible polyurethane elastomer central member bonded to the face of rigid driving and driven hubs formed, in one embodiment, of a polycarbonate material and a method of making the flexible coupling.

3,823,578

DRIVE MEANS FOR DOUBLE CYLINDER CIRCULAR KNITTING MACHINE

Gustav Voda, Trebic, Czechoslovakia, assignor to Elitex Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed June 20, 1972, Ser. No. 264,463
Claims priority, application Czechoslovakia, June 21, 1971, 4574-71
Int. Cl. D04b 9/10
U.S. Cl. 66—14 7 Claims



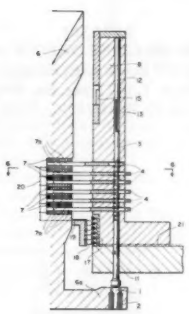
A knitting machine having a pair of rotatable needle cylinders aligned along a common axis. Means are provided for rotating one of the cylinders and transmitting the rotation to the other. The transmission means being disconnectable to selectively interrupt the rotation of the second cylinder while the first cylinder continues to rotate.

3,823,579

PATTERN CONTROL MECHANISM FOR CIRCULAR KNITTING MACHINES

Alfred Schindele, Karlstr. 36, Harthausen; Heinz Glausinger, Zuckerbergstr. 161, Stuttgart, and Jorg Helmert, Wallmershtr. 28, Stuttgart-Unterturkheim, all of Germany

Continuation-in-part of Ser. No. 63,257, Aug. 12, 1970, abandoned. This application Nov. 22, 1972, Ser. No. 308,751
Claims priority, application Germany, Aug. 16, 1969, 1941639
Int. Cl. D04b 15/78
U.S. Cl. 66—50 R 7 Claims



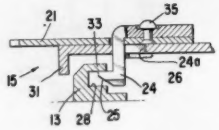
A pattern control mechanism for circular knitting machines having a rotating cylinder in which there are operatively arranged a plurality of knitting needles and jacks. The plurality of knitting needles and jacks form a plurality of knitting systems. A pattern mechanism is operatively mounted in the stationary cam cylinder which coacts with the rotating cylinder supporting the needles and jacks. Each pattern arrangement comprises a plurality of pattern sliders which are arranged in a stack. The individual pattern sliders are sequentially actuated by means of an electromagnetic control

mechanism. The control mechanism is mounted in the rotating cylinder. The pattern sliders can be locked in position by a control rod. The control mechanism comprises pushers which are actuated by a magnet, said pushers coacting in accordance with a predetermined pattern with the pattern sliders.

3,823,580
LATCHING MECHANISM FOR KNITTING MACHINE CARRIAGE

John C. Cariddi, Saddle Brook, N.J., assignor to The Singer Company, New York, N.Y.

Filed May 24, 1973, Ser. No. 363,463
Int. Cl. D04b *7/00*
U.S. Cl. 66—60 **6 Claims**

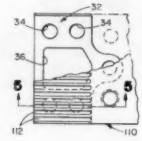


A latching mechanism for the carriage of a knitting machine that is slidable along slide rails on the bed of the machine and pivotable about one of said slide rails. A latch plate is slidably mounted in the carriage and has associated therewith a depending latch dog. The latch dog is provided with an inclined surface which is cooperable with a surface on a second slide rail so as to permit sliding movement of said latch dog on said second slide rail against the force of a spring until registration of a flange on the latch dog with a cooperating recess in said second slide rail occurs and the latch dog thereby snaps into nested latched position within said second slide rail thereby locking the carriage to the slide rails. The carriage is so formed that when it rests upon the second slide rail the weight distribution thereof causes said sliding of the latch dog to take place against the spring bias until the latch dog snaps into nested latched position.

3,823,581
KNITTING MACHINE NEEDLE HOLDER

Carmine M. Russo, 177 Forest Ave., Paramus, N.J. 07110

Filed Feb. 2, 1973, Ser. No. 329,098
Int. Cl. D04b *15/00, 35/00*
U.S. Cl. 66—86 R **2 Claims**

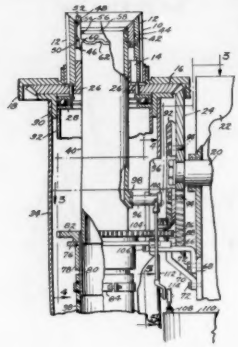


A knitting machine needle assembly, and elements thereof, with first and second needle clamping members, one of said members being longitudinally grooved to accept a multiplicity of needles and the other of said members carrying a transverse protuberance to secure needles carried in the grooves of the other against movement out of the bight of the members, each of the needles including a groove of a shape to cooperate with said protuberance.

3,823,582
AN ASSEMBLY FOR BOTH ROTATABLY DRIVING THE SUCTION DRAW-OFF TUBE AND OPERATING THE SLITTER MECHANISM OF A CIRCULAR KNITTING MACHINE

Vaughn H. Butler, Harriman, Tenn., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed June 28, 1972, Ser. No. 267,215
Int. Cl. D04b *35/34, 15/92*
U.S. Cl. 66—147 **4 Claims**

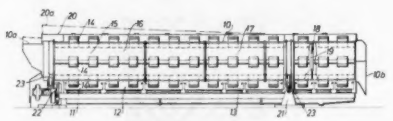


The present invention provides a simple assembly easily installable on a specific type of circular knitting machine, with substantially no modification thereof, for actuating a vertically-reciprocable non-rotating fabric-receiving slitter control tube disposed within the needle cylinder of the machine for operating a slitter mechanism at the upper end of the cylinder. The assembly also rotatingly drives a fabric-receiving suction draw-off or accumulator tube coaxially aligned beneath the control tube in synchronism with the needle cylinder for preventing twisting of long lengths of tubular fabrics knitted on the machine.

3,823,583
TUBULAR WASHING MACHINE

John Emil Stroberg; Nils Birger Thunblom, all of Ronneby, and Lars-Goran Henriksson, Ronneby, both of Sweden, assignors to Aktiebolaget CTC, Gothenburg, Sweden

Filed Aug. 22, 1972, Ser. No. 282,799
Claims priority, application Sweden, Aug. 23, 1971, 10680/71
Int. Cl. D06f *37/08*
U.S. Cl. 68—58 **6 Claims**

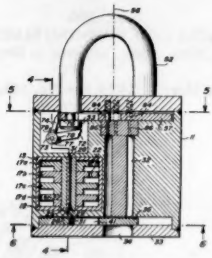


A washing machine comprising an elongated rotating tube having several, separate treatment sections and means positioned behind one or more treatment sections for restricting the flow area of the tube so as to obtain a more uniform distribution of the washing goods in the preceding sections.

3,823,584
JOINT COMBINATION ACTUATED AND KEY ACTUATED PADLOCK

Robert E. Gill, Belvidere, N.J., assignor to Harry A. Snyder, Easton, Pa., a part interest

Filed Aug. 6, 1973, Ser. No. 385,709
Int. Cl. E05b *67/22*
U.S. Cl. 70—21 **7 Claims**



A principal feature of the joint combination-actuated and key-actuated padlock disclosed is that a customer can select a plurality (such as four) of a group (such as 10) of combination disks for use in the lock. The lock is sold basically in two parts: First, the main casing, including the shackle and key-operated mechanism, having a cut-away portion. Second, a group of 10 combination disks together with a housing and spring pin means for the assembly thereof. The customer selects any four of the 10 disks to provide his own unique permutation. The customer inserts the four disks into the housing, together with the spring pin, and inserts the assembled housing into the cut-away portion of the main casing. The spring pin means engage within suitable detents within the cut-away portion, thereby retaining the assembled housing in the padlock casing. Once performed, the housing cannot be simply removed, but is permanently engaged therewithin.

By setting the proper combination with the selected disks, a reciprocating member can be disengaged from a first slidable plate which covers the keyhole of the padlock. After the combination is set, and the plate moved to uncover the keyhole, the customer can insert the key into the lock.

A second slidable plate engages both the toe and heel ends of the padlock shackle in the manner of a bolt. The second slidable plate is activated by the insertion of a key into the keyhole, which operates against tumblers oriented in openings in the slidable plate.

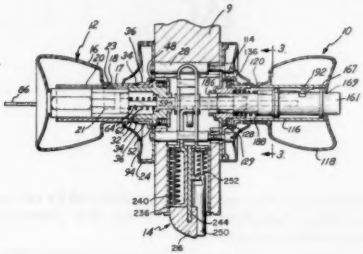
Other features include a unique configuration of two arms and a torsion spring, which, when operated upon by the toe end of the shackle, causes the second slidable plate to be urged against the shackle, so that, upon closing of the shackle, the slidable plate engages therewith and locks same.

3,823,585
UNIVERSAL KEY LOCK, PRIVACY LATCH AND DOORKNOB

Carroll V. Spon, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

Filed Nov. 10, 1972, Ser. No. 305,437
Int. Cl. E05b *55/04*
U.S. Cl. 70—146 **20 Claims**

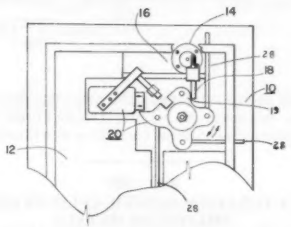
An improved door latch set which may be converted from a basic latch set into a privacy latch set or into a key lock latch set. The set includes a latch assembly, an inside doorknob assembly and an outside doorknob assembly. The doorknob assemblies are interconnected by a spindle which fits through a cam of the latch assembly. Rotation of the doorknob drives the cam which, in turn, moves the bolt of the latch assembly into or out of engagement with a strike. The inside doorknob assembly may include a push button lock mechanism which locks the latch set upon depression of the push button. The locked latch set may be released by twisting the inside doorknob or by a key mechanism associated with the outside doorknob. That is, rotation of the key mechanism drives a latching bar connected with the push button mechanism and effects release of the push button mechanism.



3,823,586
DELAYED OPENING SAFE DOORS

Leland J. Melancon, 5243 Canal Blvd., Harvey, La. 70124

Filed Nov. 7, 1972, Ser. No. 304,444
Int. Cl. E05b *15/00*
U.S. Cl. 70—268 **2 Claims**



A safe door with part of its insulation cut away adjacent its locking mechanism, which includes dialing and locking portions, to define an interior recess. A timer is mounted in the recess with its winding handle extending through the metal exterior of the safe door. An associated locking bar is slidably mounted in said recess intermediate said timer and locking mechanism and adapted to be slidably operable by winding said timer to independently immobilize the locking portion of said locking mechanism for a period of time after the winding handle is released from winding.

3,823,587
KEY HOLDER

Pierre Tcherdakoff, Neuilly sur Seine, France, assignor to S.A. Arthus Bertrand, Paris, France

Filed Oct. 13, 1972, Ser. No. 297,329
Claims priority, application France, Oct. 13, 1971, 71.36834
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R **8 Claims**

The invention is a key-ring made up of a contiguous turn coil spring and of a base to which it releasably is mounted in

the form of a U. Each end of the spring has an end member fixed thereto which comprises a neck portion and a spherical

head may passage, this aperture being followed by two seats allowing sliding movement therein of the neck portions but preventing withdrawal of the head.

3,823,588

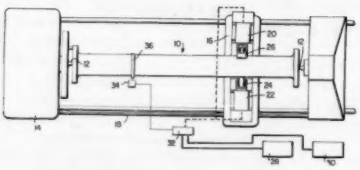
METHOD AND SYSTEM FOR STRAIGHTENING LARGE DIAMETER SHAFTS BY SELECTIVE COLD ROLLING

John E. Ancarrow, Jr., and Roy L. Harrington, both of Newport News, Va., assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Oct. 19, 1972, Ser. No. 298,978

Int. Cl. B21d *3/02*

U.S. Cl. 72—7 **9 Claims**



A method and system for straightening large diameter shafts by selective cold rolling by pressing a smaller roller against the shaft with alternating loads as the shaft is slowly rotated.

3,823,589

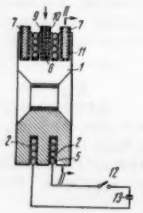
INDUCTOR FOR MAGNETIC PULSE PRESSURE SHAPING OF METALS

Alexandr Tikhonovich, ulitsa Dheprovskaya, 19, kv. 7, Mezhuev, Kharkov; Lev Timofeevich, poselick Pokatilovka, ulitsa Ulyanovskaya, 35, Khimenko, Kharkov, and Alfred Lvovich, ulitsa Dzerzhinskaya, 32, kv. 15, Shlyakht, Kharkov, all of U.S.S.R.

Filed June 1, 1973, Ser. No. 366,213

Int. Cl. B21d *26/14*

U.S. Cl. 72—56 **2 Claims**



An inductor for magnetic pulse pressure shaping of metals comprises a concentrator having a radial slot and an axial opening for placing a part to be shaped therein; recesses made at the concentrator outer surface with a working winding disposed therein; radial openings made in the concentrator body in the plane of said radial slot at both sides of each recess and to the recess depth; and current conducting inserts mounted in said radial openings, said inserts being insulated from the concentrator and bridging said radial slot, and each current conducting insert mounted between the recesses consisting of two current conducting sections insulated from each other to their depth by a lining.

3,823,590

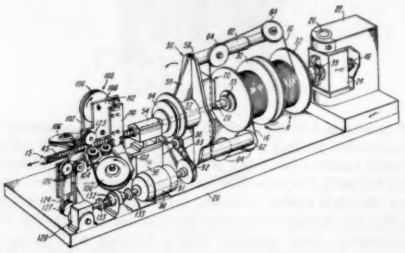
HELICAL COIL FORMING MACHINE

Ernest U. Lang, Niles, Mich., assignor to Dayco Corporation, Dayton, Ohio

Filed Mar. 21, 1973, Ser. No. 343,617

Int. Cl. B21d *11/00*

U.S. Cl. 72—66 **10 Claims**



A pair of large wire supply rolls are rotatably supported by a cantilevered tubular shaft, and corresponding wires extend from the rolls to a coil forming rotor which is also supported by a cantilevered tubular shaft aligned axially with the roll support shaft. Wire is withdrawn from the wire supply rolls by rotation of the rotor which includes precisely driven wheels for feeding the wires through corresponding sets of casting rollers to form a continuous double helix nonrotating coil. A nonrotating mandrel projects through the roll support shaft for supporting the helical coil as it is being formed and progresses axially between a set of endless belts which feed the continuous coil from the coil forming rotor and control the pitch of the wire turns of the coil. A disc brake system is mounted on the roll support shaft for braking the rotation of the wire supply rolls to control the tension in the wires, and the roll support shaft is pivotable in a horizontal direction to facilitate loading of new wire supply rolls into the machine. The machine is also adapted to be used with only one wire supply roll when only a single helix nonrotating continuous coil is required.

3,823,591

METHOD AND APPARATUS FOR PRODUCING DISH-SHAPED ARTICLES

Paul Schroder, Hamm, and Gunter Pollkotter, Ahlen, both of Germany, assignors to Leifeld & Co., Ahlen, Germany

Filed Nov. 8, 1972, Ser. No. 304,615

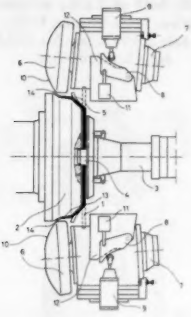
Claims priority, application Germany, Nov. 15, 1971, 2156551

Int. Cl. B21d *22/16, 22/18*

U.S. Cl. 72—85 **7 Claims**

A method and apparatus are disclosed for forming dish-shaped articles from a circular blank by spinning operations. Spinning rollers having large radius shoulders are guided by template control means along a first path to spin the blank to form a curved intermediate shape at a first high speed operation. The intermediate shape is then subjected to a draw spin

operation with a smaller radius shoulder guided by a second template control means along a second path distinct from the



first path. The speed of operation for the second path is controlled to uniform deformation energy for the second run.

3,823,592

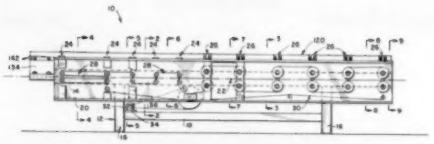
ROLL-FORMING MACHINE

Dan L. Colbath, P.O. Box 1003, Sherman, Tex. 75090

Continuation-in-part of Ser. No. 181,838, Sept. 20, 1971, Pat. No. 3,748,884. This application Apr. 30, 1973, Ser. No. 355,673

Int. Cl. B21d *5/08*

U.S. Cl. 72—181 **8 Claims**



A roll-forming machine includes a plurality of forming members which are mounted at spaced points on an elongate, rigid spine. This permits conversion of the machine from one roll-forming configuration to another by removing the spine and the roll-forming members attached thereto and then installing a different spine-forming member assembly in the roll-forming machine. In one embodiment of the invention the forming members comprise non-driven material engaging rollers and the roll-forming machine further includes a plurality of roll-stands each comprising non-forming driving rollers for moving material through the roll-forming machine. In another embodiment of the invention the forming members comprise combination driving and forming rollers and couplers are provided for forming driving connections to the rollers. In a third embodiment the rigid spine supports non-driven forming rollers and idler rollers which cooperate with driving rollers to move material through the roll-forming machine.

3,823,593

METHOD OF ROLLING METAL SHEET ARTICLES BETWEEN THE DRIVEN ROLLS OF THE ROLL MILL

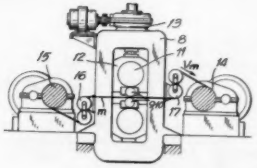
Vladimir Nikolaevich Vydrin, ulitsa Svobody, 139, kv. 7, and Leonid Matveevich Ageev, ploschad MOPRa, 2, kv. 33, both of Chelyabinsk, U.S.S.R.

Division of Ser. No. 836,851, June 26, 1969, Pat. No. 3,709,017. This application Apr. 18, 1972, Ser. No. 245,250

Int. Cl. B21b *1/28, 39/08*

U.S. Cl. 72—205 **11 Claims**

The present invention relates to a method of rolling metal sheet articles between cooperating driving and driven rolls of rolling mills, the rolls being rotated in opposite directions at different peripheral speeds. A stretching strain is applied to the delivery section of the article, and the process is effected with the ratio between the peripheral speeds of the rolls being not less than the reduction of the article being rolled, and with



the rate of travel of the delivery end of the article being equal to the peripheral speed of the driving roll that is rotated at a greater speed. The invention also discloses mills for effecting the present method, which are provided with means for insuring the required ratios between the peripheral speeds of the rolls.

3,823,594

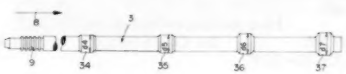
ROLLING OF TUBULAR BLOOMS TO PRODUCE TUBES

Walter Vom Dorp, Rheydt, and Hans Eversberg, Monchengladbach, both of Germany, assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Sept. 6, 1973, Ser. No. 394,910

Int. Cl. B21b *17/10*

U.S. Cl. 72—209 **6 Claims**



According to the present disclosure there is provided a method and means for rolling tubular blooms to form tubes, in which at tubular bloom is passed during a plurality of working passes over a corresponding plurality of consecutive plugs arranged on a tension-loaded plug mandrel, said working passes being followed by a consecutive smoothing pass, wherein said working and smoothing passes are carried out in a continuous operation, in sequence, during which operation the external diameter of the tubular bloom is maintained substantially constant, the internal diameter of the bloom being enlarged during at least two of said working passes, and during said operation at least one smoothing pass being employed in the course of which an enlargement of the internal diameter takes place.

3,823,595

WORKPIECE POSITIONER AND EJECTOR

Jess Frank Sorenson, Yucaipa, Calif., assignor to Sorenson Engineering Inc., Yucaipa, Calif.

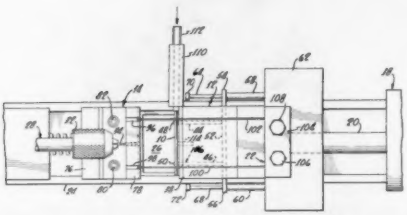
Division of Ser. No. 93,579, Nov. 30, 1970, Pat. No. 3,684,392. This application July 31, 1972, Ser. No. 276,521

Int. Cl. B21d *43/00*

U.S. Cl. 72—312 **2 Claims**

A workpiece positioner and ejector for use in secondary operation machines and the like in which the workpiece is carried by a support block on positioners which are freely slidable

in the support block to a backing block which is mounted for resistive movement along with the support block is disclosed. As the support block approaches the backing block, the positioner is retracted into the support block such that the workpiece is then clamped between the support block and the backing block and, so clamped, is moved into contact with a



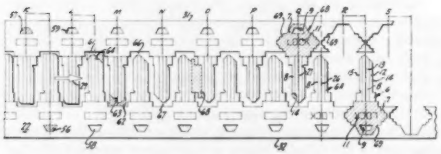
tool at which position the tool performs a modifying operation on the workpiece. One or more resilient fingers exerts a force on the workpiece such that when the support block is moved away from the tool and the backing block, the workpiece is ejected. The support block is moved in one continuous motion toward the tool and in another continuous motion from the tool to its initial position.

3,823,596

METHOD OF PRODUCING LOCK KEY BLANKS

George Elder, Woodside, and Hans F. Lehnhoff, Morage, both of Calif., assignors to Schlage Lock Company, San Francisco, Calif.

Filed Jan. 26, 1973, Ser. No. 326,827
Int. Cl. G01f *23/02*
U.S. Cl. 72—324 **4 Claims**



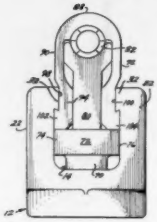
Lock key blanks are produced from an elongated strip of key material having a width at least as great as the length of a transversely extending key pair arranged with their shanks overlapping longitudinally of the strip and arranged with their bows alternately disposed adjacent opposite edges of the strip. Production is accomplished by performing simultaneously in time and successively in the length of the strip certain forming and cutting operations shaping and removing from the strip different areas defining fractional parts of the boundaries of the key pair, also performing operations coining and grooving the potential key pair, and finally performing cutting operations severing the boundaries of portions remaining integral with the strip to free fully formed, separate key pair blanks from the strip.

3,823,597

SWAGING TOOL DIE EXTENDER

Francis J. Hanback, Palos Verdes, and Norman F. Robinson, Manhattan Beach, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed July 2, 1973, Ser. No. 375,694
Int. Cl. B21d *37/00*
U.S. Cl. 72—402 **6 Claims**



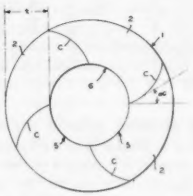
A horseshoe shaped swaging tool die extender adapted to fit onto an existing piston driven power system used for attaching fittings to fluid system pipes by external swaging. This die extender permits the swaging of fittings on closely spaced pipes.

3,823,598

SEGMENTAL DIES

Michael Walter Freeman, 401 David Whitny Bldg., Detroit, Mich. 48226

Continuation of Ser. No. 722,778, April 19, 1968, abandoned. This application Aug. 23, 1972, Ser. No. 282,895
Int. Cl. B21c *3/04*
U.S. Cl. 72—467 **9 Claims**



A die nib is determined by a mathematically defined segment-shaped portion or die nib segment, a multiplicity of which are assembled together to form the die nib proper, each segment contacting its adjoining segment along a mathematically determined curvilinear transverse face whereby work stresses control the distribution of cohesive pressures along the interfaces of the segments, the segment-shaped portions having workpiece engaging walls forming a die opening of the shape desired for shaping the work material, the curvilinear transverse faces being illustrated by a wide variety of forms.

3,823,599

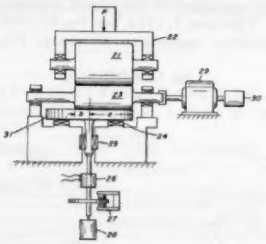
TEST APPARATUS FOR THE EVALUATION OF ROLLING LUBRICANTS

Donald C. Litz, Churchill Boro, and Francis E. O'Brien, Monroeville Boro, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1972, Ser. No. 313,224
Int. Cl. G01n *19/02*
U.S. Cl. 73—10 **4 Claims**

A test apparatus for the evaluation of the lubricity of rolling oils and the interaction of such oils with a variety of metal alloys employed in the construction of rolls. The axis of a driven work roll is placed on a radial line of a disc. The lubricant

under test is applied to the region of frictional contact between the roll and the disc. The resultant speed of the disc is controlled by applying a torque to the disc. With a roll of given



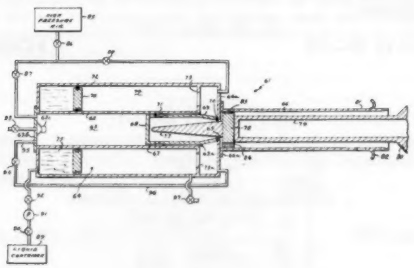
length, and a known load applied by the roll to the disc, the coefficient of friction is determined by measuring the torque on the disc. This coefficient can thus be evaluated for various degrees of slipping velocity of a roll.

3,823,600

PNEUMATIC LINEAR ACCELERATOR

Walter M. Wolff, Enon, Ohio, assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Apr. 9, 1973, Ser. No. 349,901
Int. Cl. G01n *3/30*
U.S. Cl. 73—12 **9 Claims**



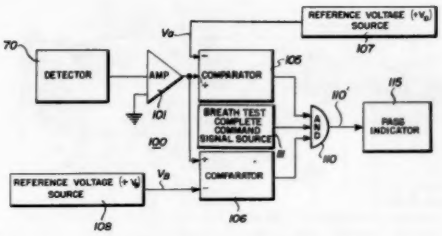
A pneumatically-operated, linear accelerator including a control chamber having an open end; one or more load chambers surrounding the control chamber; and a drive chamber having an end wall with an inner opening in communication with the control and load chambers, a drive piston on one side of and blocking the inner opening and incorporating a metering pin extending through the opening, and a push rod in contact with the drive piston and extending through an outer end opening in an opposite end wall of the drive cylinder for integral attachment to a test vehicle. A hollow control piston, mounted in overlapping relation in the control chamber and encompassing the projecting metering pin, incorporates an orifice end that extends to, and is held in sealed relation against the drive cylinder-communicating inner opening by the introduction of compressed air, at equal pressure, into both the control and load chambers. The accelerator is fired, and the drive piston, push rod and attached test vehicle accelerated to the test velocity by the activation of a fast acting valve to relieve the pressure in the control chamber and thus enable the compressed air in the load chambers to move the control piston away from its sealed position and thereby enter the communicating inner opening for action directly against the drive piston.

3,823,601

ANTI-EVASION SYSTEM FOR A BREATH ALCOHOL TESTER

Joseph P. Hoppesch, Schaumburg, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 26, 1972, Ser. No. 318,051
Int. Cl. G01n *31/00*
U.S. Cl. 73—23 **4 Claims**



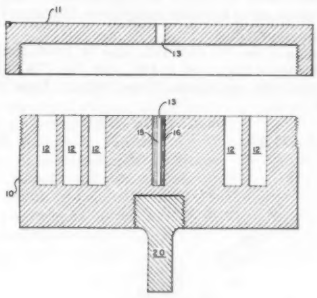
A system for discouraging evasion of a breath tester (especially those testers designed to be used by an unsupervised or under-supervised subject) employing the effect that the response of certain detector elements (e.g., catalytic and semiconductor alcohol detecting elements) to non-alcoholic breath differs from the response or other produced for air substitutable gases. Means employing the differing responses to cause a "pass" only if the output is in a "window" between substantially the non-alcoholic breath signal and the signal level produced by breath having a predetermined alcohol concentration (e.g., 0.1 percent blood alcohol concentration) are disclosed.

3,823,602

SAMPLING DEVICE

Paul L. Anderson, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Nov. 20, 1972, Ser. No. 307,772
Int. Cl. G01n *15/00*
U.S. Cl. 73—28 **9 Claims**



An improved centrifuge sampling device for the capture and size segregation of particles less than 2 microns in diameter from a fluid containing same. The device comprises a rotating body and cap which define a spirally shaped conduit having from 1.5 to about 2.5 convolutions. The particulate-laden fluid as sampled is split by the sampler into a large stream and a small stream. The large stream is directed to the beginning of the spiral conduit where entrained particles are removed by centrifugal forces. The smaller stream is introduced into the larger stream contained in the spiral conduit when substantially all particulate matter has been removed from the larger stream and the flow has been rendered laminar.

3,823,603

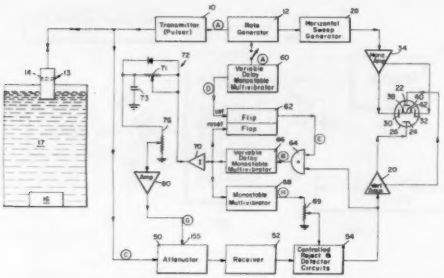
ULTRASONIC INSPECTION APPARATUS

John W. Couture, Danbury, Conn., assignor to Automation Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 813,553, April 4, 1969, abandoned. This application Sept. 7, 1971, Ser. No. 178,485

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.9 2 Claims



An ultrasonic nondestructive test system as described which includes signal attenuation means. The system includes a transducer, a transmitter and a receiver for displaying on a cathode ray tube defects or other discontinuities in the workpiece. An attenuator circuit is coupled before the receiver and is gated on and off at predetermined times and especially if a receiver has been adjusted to a high gain for detection of small defects beneath the surface of the workpiece. After the receiver receives part of its initial interface return signal, portions of the initial interface signal are abruptly attenuated by gating the attenuator.

3,823,604

METHOD OF AND APPARATUS FOR DETECTING SURFACE FORM IRREGULARITIES

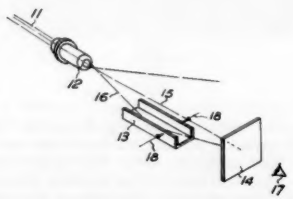
James Morriss Burch; Raymond John Wilton, both of Teddington; Colin David Reid, and Michael Richard Wall, both of Aldermaston, all of England, assignors to Holotron Corporation, Columbus, Ohio

Continuation of Ser. No. 557,452, June 14, 1966, abandoned. This application Aug. 4, 1972, Ser. No. 278,049

Claims priority, application Great Britain, June 15, 1965, 25269/65

Int. Cl. G01n *1/18*

U.S. Cl. 73—71.3 27 Claims



Method of and apparatus for detecting surface form irregularities by means of the pattern of interference fringes produced when a three-dimensional image of a reference surface form is superimposed upon a surface form having such irregularity.

3,823,605

METHOD AND APPARATUS FOR TESTING TUBES DURING SIZING BY A MECHANICAL EXPANDER

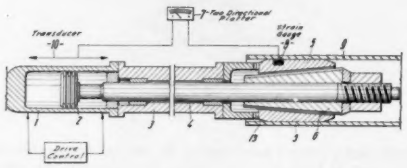
Helmut Schmitz, Wittlaer, and Detlef Ramdohr, Krefeld-Traar, both of Germany, assignors to Mannesmannrohren-Werke Aktiengesellschaft, Dusseldorf, Germany

Filed Dec. 7, 1972, Ser. No. 311,708

Claims priority, application Germany, Dec. 10, 1971, 2162029

Int. Cl. G01b *5/30*

U.S. Cl. 73—89 7 Claims



The grade of tubing is checked during tube expansion for sizing in that the axial displacement of a wedge action, segment spreading expanding tool is plotted against strain gauged deformation of one of the radially spread segments.

3,823,606

MEASURING INTERNAL COMBUSTION MOTOR CYLINDER COMPRESSION

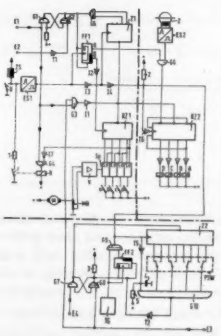
Albert Maringer, Karlsruhe, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 15, 1973, Ser. No. 332,657

Claims priority, application Germany, Feb. 18, 1972, 2207789

Int. Cl. G01m *15/00*

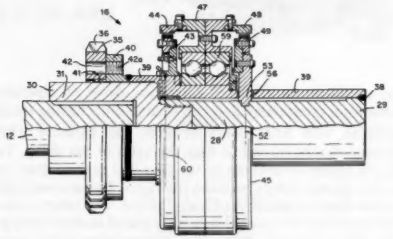
U.S. Cl. 73—115 6 Claims



To obtain an electrical measurement of the compression of an internal-combustion reciprocating-piston engine via the current taken by an electric starter, during a first cycle of electrical ignition sequences successive peak values of the starter current are stored in adjacent cells of an analog memory in the rhythm of the closing flanks of the distributor breaker point output pulses with the ignition coil short-circuited. During a second cycle of ignition sequences with the ignition coil in the circuit, the first ignition pulse of a given cylinder is then fed into the first stage of a ring counter having a number of stages corresponding to the number of cylinders of the engine and assigned in reverse order to the cells of an analog memory, and is shifted along in the rhythm of the closing flanks to the end of a third cycle of ignition sequences. Starting with the stage of

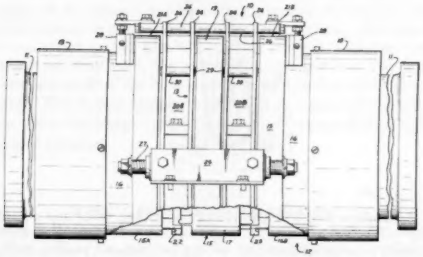
the ring counter marked after the end of the third cycle of ignition sequences, the peak values of the starter current stored in the analog memory are called up serially via a relay selector by means of timing pulses of a timing generator which are fed to the ring counter via a switching network which is programmed according to the ignition sequence applicable to the engine.

3,823,607
HEAVY-DUTY TORQUE COUPLING
Herbert A. Rundell, Houston, Tex., assignor to Texaco, Inc., New York, N.Y.
Filed Aug. 14, 1972, Ser. No. 280,638
Int. Cl. G01l 3/10
U.S. Cl. 73—136 A **6 Claims**



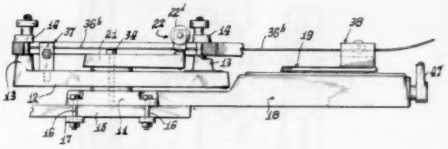
A heavy-duty coupling unit that incorporates a sensitive torque-measuring device. It has provision for being mounted on the end of a torque-load transmitting shaft, and it has a folded-back structure so as to accommodate a gear or the like for a laterally coupled drive.

3,823,608
TORQUE TRANSDUCER
Pontie J. Pantermuehl, Sequin, and George F. Munsch, San Antonio, both of Tex., assignors to Southern Gas Association, Dallas, Tex.
Filed Oct. 25, 1972, Ser. No. 300,438
Int. Cl. G01l 3/10
U.S. Cl. 73—136 A **16 Claims**



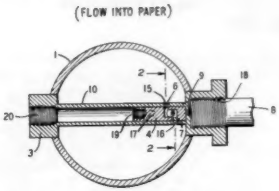
A torque transducer is disclosed on the slotted indicator sleeve type which converts torque on a shaft to lateral movement of such magnitude that a measurable output signal can be produced to determine the torque on a shaft. This invention is also adapted to be coupled to the shaft without altering the shaft in any way and it can be adapted to connect to the shaft without disconnecting the shaft.

3,823,609
STRING TENSIONING MECHANISM
Frank H. Miyagawa; Daniel D. Kipnis, both of Chicago, and Thomas C. Mills, Bartlett, all of Ill., assignors to Tremont Research Co., Inc., Chicago, Ill.
Filed Jan. 15, 1973, Ser. No. 323,900
Int. Cl. G01l 5/06
U.S. Cl. 73—145 **10 Claims**



The invention relates to racket stringing apparatus including novel means for tensioning the strings thereof during stringing of a racket frame and determining the degree of tension applied.

3,823,610
BLUFF BODY FLOWMETER UTILIZING A MOVEABLE SHUTTER BALL RESPONSIVE TO VORTEX SHEDDING
Theodore John Fussell, Jr., Bridgewater Twsp., Somerset Cty., N.J., assignor to Eastech, Inc., South Plainfield, N.J.
Filed Jan. 5, 1973, Ser. No. 321,532
Int. Cl. G01f 1/00; G01p 5/10
U.S. Cl. 73—194 B **14 Claims**

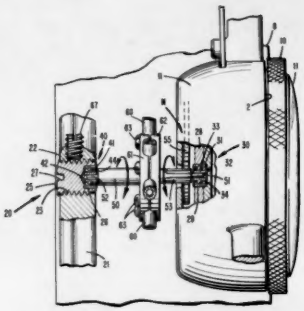


A bluff body flowmeter is disclosed which includes a bluff body having a base surface facing fluid flow, a pair of converging downstream surfaces, a pair of orifices proximate the downstream surfaces, a cylindrically shaped chamber within the body in communication with the pair of orifices via separate channels, a shuttle ball free to move a relatively short distance within said chamber along the long axis of said bluff body in response to vortex induced pressure changes at the orifices, and means responsive to the movement of the ball for producing electric signals related to volumetric flowrate.

3,823,611
VANE ANEMOMETERS
Maurice G. Rudow, and Warren D. Klawans, both of Baltimore, Md., assignors to Davis Instrument Manufacturing Co., Inc., Baltimore, Md.
Filed Feb. 28, 1973, Ser. No. 336,521
Int. Cl. G01f 1/02
U.S. Cl. 73—231 R **3 Claims**

A vane anemometer of high sensitivity is comprised of an open-ended frame with an integral central housing at the front thereof for mounting a clockwork register mechanism. An impeller shaft mounting a plurality of radial vanes operates within the frame between the housing and a detachable spider mount at the rear of the frame. Aligned miniature ball-bearing

assemblies at the hub of the spider and in the clockwork register mechanism support the opposite needle ends of the impeller shaft so that air currents of low velocities actuate the impeller shaft to register the movements of the latter, which are indicated on the face of the register.



3,823,612

TRIP MECHANISMS

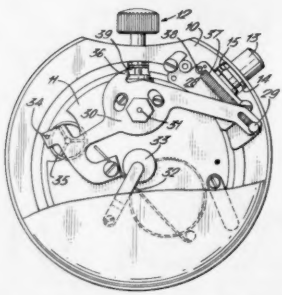
Cecil Leslie Boult, near Swansea, Wales, assignor to Smiths Industries Limited, London, England

Filed Aug. 10, 1972, Ser. No. 279,400

Claims priority, application Great Britain, Aug. 20, 1971, 39088/71

Int. Cl. F16h *21/44*

U.S. Cl. 74—100 **3 Claims**



A trip mechanism for a stop-watch has a pivotally mounted operating lever movable between two operative positions to inhibit or enable movement of the hands of the watch. An engagement member engageable with the operating lever to switch it between its two positions, is in the form of a unitary plunger having a bifurcated end so as to provide two parts each for engaging a distinct one of two elements, or notches, of the lever in accordance with the position of the lever when the mechanism is operated. A spring is coupled to the lever and acts to bias the lever in the manner of an over-centre toggle into its two operative positions. The plunger extends from its bifurcated end into abutment with the interior of a hollow push-button cap, and is acted upon by a spring to maintain this abutment and at the same time spring bias the push-button into the rest position. Depression of the push-button displaces the plunger longitudinally towards the lever so as to bring about the appropriate engagement of the bifurcated end with the lever notches.

3,823,613

VARIABLE RATIO TRACTION DRIVE

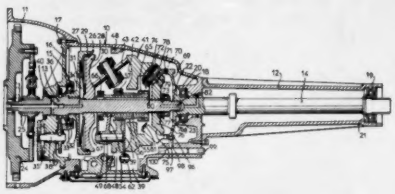
Randle Leslie Abbott, Tamworth, England, assignor to GKN Transmission Limited, Birmingham, England

Filed Dec. 8, 1972, Ser. No. 313,567

Claims priority, application Great Britain, Dec. 8, 1971, 56892/71

Int. Cl. F16h *15/38, 37/06*

U.S. Cl. 74—200 **3 Claims**



The specification discloses a traction drive of separately variable form comprising first and second discs having torodial surfaces with first rollers between the surfaces whose inclination can be varied to vary the ratio of the drive. Two races are rigidly connected to the first and second discs and there are second rollers between the races. The second rollers are either frusto conical or of barrel shape. The rotary axes of the second roller lie on an imaginary conical surface having at its axis the rotary axis of the disc. The rotation of the second disc is derived solely from its engagement with the first and second rollers.

3,823,614

ENDLESS BELT ALIGNING SYSTEM

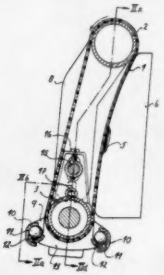
Ermenegildo Fava, and Ermanno Sibilia, both of Milan, Italy, assignors to Oce-vander Grinten N.V., Venlo, Netherlands

Filed Nov. 20, 1972, Ser. No. 308,056

Claims priority, application Netherlands, Nov. 22, 1971, 7116046

Int. Cl. F16h *7/18*

U.S. Cl. 74—241 **6 Claims**



An endless belt trained between a driving roller and a guiding roller, such e.g. as a wide rubber belt having a flight thereof bearing against and serving to transport photoprinting sheets over a perforated wall of a tank holding a gaseous developing medium, is maintained in alignment by mounting the belt guiding roller, through rigid members rigidly connected with its bearing supports, on oppositely inclined guide tracks, such as ball tracks each holding one or two bearing balls, which are rigidly supported by structures at the opposite ends of the guiding roller. The guide tracks support parts of the roller mounting members for sliding movement in limited paths so inclined that their linear projections intersect at a

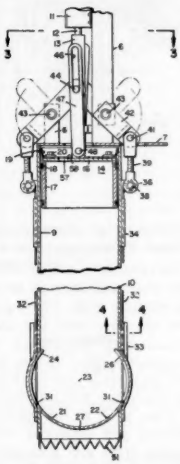
point located away from the axis of the guiding roller on or near to a line connecting the mid-points of the axes of the two rollers. The mounting members present flanges at opposite sides of the belt path, each engageable by an edge of the belt for corrective displacement of the guiding roller if the belt travels too far sidewise. Rigid arms provided as the structures supporting the guide tracks can be swung about the axis of the driving roller for movement of the belt and guiding roller assembly away from working position, and can be adjusted in length to provide the required belt tension.

3,823,615

SAMPLER FOR BULK GRAPES

Michael O'Brien, Davis, and Clinton L. West, Yuba City, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 19, 1973, Ser. No. 352,437
Int. Cl. G01n *1/12*
U.S. Cl. 73—425.2 **12 Claims**



A sampler for grapes held in bulk and having juice therewith includes a frame on which a sampling cylinder is mounted. At the lower end of the sampling cylinder is a gate mechanism arranged to be opened and closed. A piston is movable in the cylinder so as to pull a vacuum within the cylinder. The piston is connected to the gate mechanism through a lost motion linkage so that when the sampler is plunged into the bulk grapes a sample of the bulk grapes along with their juice is obtained. The loaded sampler is movable to a point for inspection. After discharge the mechanism can be reused for a subsequent sampling.

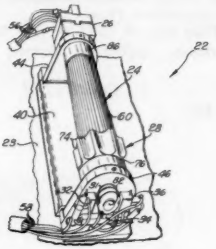
3,823,616

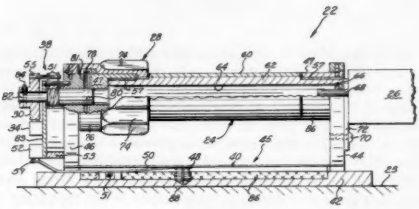
HAND GRIP CONTROL ASSEMBLY

Henry J. Houseman, Fairless Hills, and Louis C. Roll, Philadelphia, both of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed June 4, 1973, Ser. No. 366,960
Int. Cl. G05g *5/00*
U.S. Cl. 74—471 **15 Claims**

A hand grip control assembly is constructed to provide at least three independent control signals in response to predetermined manipulations of a single hand when supported by the control assembly. The control assembly has a base to which a spaced pair of support members are rigidly affixed. Between these support members a first and a second rotating member is mounted. The first member provides a main hand support which the hand may grasp and rotate to actuate a first control signal. The second member is mounted proximately to and in line with the first member to allow the thumb of the hand grasping the first member to also rotate the second member and actuate a second control signal. The third





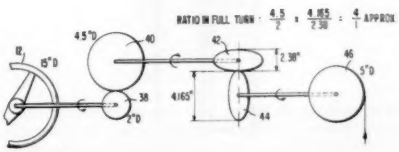
member is movably mounted to the base to allow the fingers of the hand grasping the first member to also depress the third member and actuate a third control signal. The control assembly is mountable on a control panel of an industrial truck to allow the truck operator to actuate at least three truck functions while simultaneously supporting himself by grasping the control assembly with his hand.

3,823,617

STEERING SYSTEM

Arthur W. Infanger, Cayuga, and Alan W. Brownlie, Skaneateles, both of N.Y., assignors to Aqua Marine Manufacturing Limited, Ontario, Canada

Filed Apr. 28, 1972, Ser. No. 248,503
Int. Cl. B63h *25/10*; **B62d** *1/20*; **F16h** *35/02*
U.S. Cl. 74—498 **9 Claims**



A steering system particularly suitable for watercraft wherein the input is non-linearly related to the output so that when the watercraft is running on a straight course the steering is very sensitive operating at a low ratio input to output and when the watercraft is in full turn, the steering is much less sensitive operating at a high ratio input to output.

Preferably, the system employs oval gears for transmitting speed from the input which may be the steering wheel or similar control member to the output which may be the rudder or an outboard motor of the craft.

3,823,618

STEERING WHEELS FOR AUTOMOBILE VEHICLES

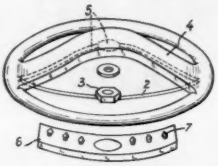
Robert Broyer, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of, France

Filed Mar. 19, 1973, Ser. No. 342,503

Claims priority, application France, Mar. 28, 1972, 72.10869

Int. Cl. B62d *1/06*

U.S. Cl. 74—552 **6 Claims**



A steering-wheel for an automobile vehicle constituted by a pre-formed assembly of a rim, and arms for coupling the rim to a steering column, fixed to the rim in which the pre-formed assembly is entirely over-moulded by a coating of synthetic material such as a polyurethane foam forming a skin and giving the coating a homogeneous appearance without discontinuity between the rim and said arms, the coating of said arms being such as to be temporarily detachable by lifting away from said arms in order to provide access to the mounting on said steering column.

3,823,619

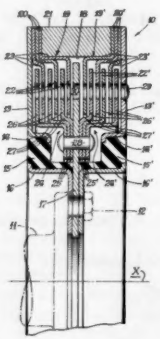
MULTI-PLATE VIBRATION DAMPER

Daniel B. Shotwell, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 27, 1972, Ser. No. 301,590

Int. Cl. F16f *15/12*

U.S. Cl. 74—574 **11 Claims**



A vibration damper comprises a housing having an annular weight secured between radially disposed side plates. An outer set of annular, cup-shaped shear inducing members comprise outer flanges secured between the weight and the side plates and inner shear discs projecting radially inwardly into an annular chamber formed in the housing. An inner set of similar shear inducing members have their inner flanges secured to a centrally disposed plate, attached to the housing, and their outer shear discs interleaved with the inner shear discs of the outer set of shear inducing members to provide clearances therebetween. The housing is at least partially filled with a damping fluid, such as a highly viscous silicone fluid, which enters the clearances during damper operation.

3,823,620

AUTOMATICALLY AND CONTINUOUSLY VARIABLE TRANSMISSION

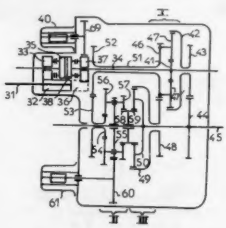
Rene Leon Bricout, Notre Dame de Breuil-79, Aigonnay, France

Filed May 19, 1972, Ser. No. 254,867

Claims priority, application France, May 21, 1971, 71.18392; Nov. 16, 1971, 71.40867; Mar. 15, 1972, 72.08991; May 4, 1972, 72.15870

Int. Cl. F16h *37/06, 37/10*

U.S. Cl. 74—675 **13 Claims**



The invention relates to an automatically and continuously variable transmission for changing the velocity of a driven shaft relative to the velocity of a drive shaft. The transmission includes three epicyclic trains, namely an input train, a control train and an intermediate train. The input train includes an element driven by the drive shaft and another element connected to the driven shaft. The control train is a high ratio train including a planetary gear system, the planet-carrier of which is driven by an electric motor of variable velocity and low power, of the order of 1 percent of the power to be transmitted from the drive shaft to the driven shaft. A first sun-wheel of the planetary gear system is connected to the third element of the input train and a second-sun-wheel is connected to an element of the intermediate train, the two remaining elements of which are respectively connected to the input train and to either of the drive or the driven shafts.

The control motor provides a constant reaction torque and consists of a double squirrel-cage, asynchronous electric motor, the stator of which is supplied by an alternator driven by the transmission so as to produce a field rotating permanently in the same direction.

The control motor is so constructed as to have a torque of between 1 percent and 3 percent of the maximum transmitted torque, the ratio of the epicyclic train which drives it being selected accordingly.

3,823,621

VEHICLE AUTOMATIC TRANSMISSION CONTROL SYSTEM

Seitoku Kubo; Teruo Akashi, and Chirio Hayashi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed Dec. 22, 1971, Ser. No. 210,826

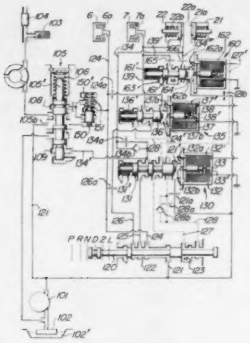
Claims priority, application Japan, Dec. 27, 1970, 45-126234

Int. Cl. F16h *47/04, 5/48;* **F16k** *31/06*

U.S. Cl. 74—752 A **10 Claims**

A control system for an automatic transmission for an automotive vehicle comprising a combination of a hydraulic control section and an electrical control section. The hydrau-

lic control section includes a servo capacity control value connected to a plurality of hydraulic servos for controlling fluid pressure supplied to the hydraulic servos during a shift from one speed ratio to another by discharging a portion of fluid under pressure from at least one of the hydraulic servos or from an associated fluid passage into a pressure discharge port



through an orifice, and the electrical control section includes means for controlling the operation of the servo capacity control valve depending on the running conditions of the vehicle. The servo capacity control valve and the electrical control means cooperate to delicately control the rate and timing of engagement and disengagement of frictional engaging means for ensuring a smooth shift.

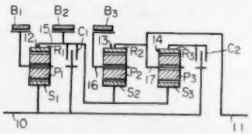
3,823,622

GEAR TRAIN ARRANGEMENTS

Yoichi Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, and Tetsuya Iijima, both of Tokyo, all of Japan, assignors to Nisson Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 30,496, April 21, 1970, Pat. No. 3,701,293. This application Sept. 13, 1972, Ser. No. 288,551
Claims priority, application Japan, Apr. 30, 1969, 44-32685
Int. Cl. F16h *57/10*

U.S. Cl. 74—759 **1 Claim**



Gear train arrangements for transmitting a power from a driving source to a driven member at more than three speeds in one direction and another speed in the opposite direction, the gear train arrangements using basically three planetary gear sets and at least five friction elements such as clutches and brakes which are selectively actuated to selectively engage the rotary members of the three planetary gear sets to deliver an output power at the above said speeds. The gear train arrangements are specifically adapted for use in an automatic transmission system of a motor vehicle using a torque converter or fluid coupling.

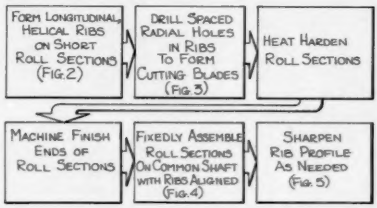
3,823,623

SLITTING ROLL AND METHOD OF FABRICATING SAME

Grover C. Currie, Lenoir, and Brendan L. Doll, Patterson, both of N.C., assignors to Cellu Products Company, Patterson, N.C.

Filed Mar. 22, 1973, Ser. No. 343,677
Int. Cl. B23p *15/40;* **B26d** *4/66*

U.S. Cl. 76—101 A **15 Claims**


FORM LONGITUDINAL HELICAL RIBS ON SHORT ROLL SECTIONS (FIG. 2)
DRILL SPACED RADIAL HOLES IN RIBS TO FORM CUTTING BLADES (FIG. 3)
HEAT HARDEN ROLL SECTIONS
MACHINE FINISH ENDS OF ROLL SECTIONS
FIXEDLY ASSEMBLE ROLL SECTIONS ON COMMON SHAFT WITH RIBS ALIGNED (FIG. 4)
SHARPEN RIB PROFILE AS NEEDED (FIG. 5)

A slitting roll for slitting an advancing sheet of elongate flexible foam material or the like to form a pattern of incisions therein. The roll includes a plurality of ribs of inverted V-shaped profile in the surface thereof, the ribs being disposed along a small helix angle with respect to the axis of the roll. A series of spaced radial apertures are formed in the ribs to define a plurality of spaced cutting blades, and the roll comprises a series of coaxial roll sections fixedly assembled onto a common supporting shaft.

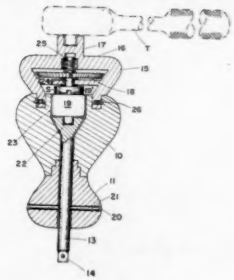
3,823,624

HAND RATCHET WRENCH FOR TORQUE WRENCH ACTUATION

James E. Martin, 11477 Easton St., N.E., Alliance, Ohio 44601

Filed Aug. 31, 1972, Ser. No. 285,246
Int. Cl. B25b *13/00*

U.S. Cl. 81—58.1 **5 Claims**



A hand ratchet wrench with means for applying a torque wrench thereto consists of a principal body member having a configuration conveniently held in a person's hand with a shaft positioned axially thereof and extending outwardly therefrom for engaging a socket in the manner of a socket wrench. A ratchet mechanism is incorporated in the principal body member and a fitting or attachment is provided for the reception of the driving element of a torque wrench whereby motion imparted the shaft either by the hand holding the wrench or the torque wrench is conveniently conveyed to the shaft and any socket thereon.

3,823,625

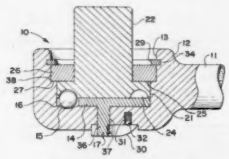
RATCHET-LIKE WRENCH

Herman A. Myers, Masontown, Pa., assignor to Innovate, Inc., Masontown, Pa.

Filed Oct. 31, 1973, Ser. No. 411,212

Int. Cl. B25b *13/00*

U.S. Cl. 81—59.1 **4 Claims**



The ratchet-like wrench comprises a handle terminating in a body having an open chamber, a separator positioned in the chamber, a hub member positioned above the separator and a closure member closing off the chamber. The bottom surface of the chamber includes a plurality of spaced recesses accurately formed and a ball is positioned in each recess. The ball is also accommodated by an annular groove in the hub member. The separator operates between the recesses and a biasing spring is positioned between the separator and the ball in each recess. A selector connected to the separator is adjustable to urge the balls along the arcuate surface so as to force the hub member into engagement with the closure member thereby preventing rotation of the hub.

3,823,626

METHOD OF AND APPARATUS FOR MACHINING CURVED SURFACES

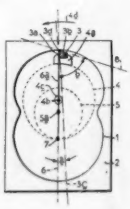
John Bakewell, Warwick, England, assignor to GKN Transmission Limited, Birmingham, England

Filed May 30, 1973, Ser. No. 365,192

Claims priority, application Great Britain, May 30, 1972, 25169/72

Int. Cl. B23b *3/00, 3/28*

U.S. Cl. 82—1 C **20 Claims**



An appparatus for forming a machined epitrochoidal surface comprising a body structure supporting an orbitally movable carrier constrained to an epitrochoidal orbit determined by the meshing of a stationary base gear and an orbital gear of annular form driven by an eccentric, at least one tool holder being driven by the carrier along an epitrochoidal path while the angular relationship between a working face of the tool and the path along which it is moved is determined by a guide member carried round with the assembly of carrier, driving eccentric, and tool holder and having engagement with this assembly at two locations, the first of which is coaxial with a moving instantaneous centre defined by the point of contact or meshing between the base and orbiting gears, and the other of which is coaxial with a pivotal axis about which the tool holder can move and which passes through the point of engagement between the working face of the tool and a workpiece, slide and slideway means being provided in association with the guide member at one of these locations to enable the carrier to accommodate the changing distance between said two locations.

3,823,627

DEVICE FOR CUTTING AND MACHINING DISC-SHAPED WORKPIECES ON BOTH SIDES THEREOF

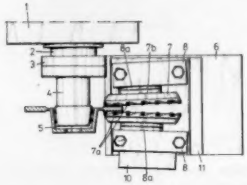
Hans Scharfen, Meerbusch, Germany, assignor to Paul Forkardt Kommanditgesellschaft, Dusseldorf, Germany

Filed Jan. 23, 1973, Ser. No. 326,112

Claims priority, application Germany, Jan. 28, 1972, 2204034

Int. Cl. B23b *5/02*

U.S. Cl. 82—2 A **11 Claims**



A tool device, especially for machining the sides of a disc shaped workpiece in which indexable cutting tool holders are spaced radially from the axis of rotation of the workpiece with each holder supporting a plurality of cutting elements in uniformly circumferentially spaced relation. The cutting elements nearest the workpiece are in cutting position for cutting the workpiece, while the others of the cutting elements can be brought into cutting position successively by indexing of the holders. The holders may be connected to index in unison and jaw clutch elements are provided for locating the holders in each indexed position. Preferably, the holders are indexable on respective axes which diverge toward the axis of rotation of the workpiece.

3,823,628

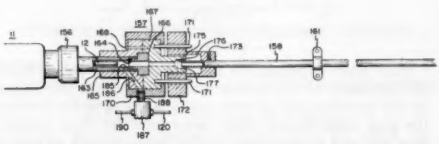
RAW MATERIAL FEEDER SYSTEM

William S. Fortune, 1450 Dearborn St., Panorama City, Calif. 91402

Continuation-in-part of Ser. No. 168,673, Aug. 3, 1971, abandoned. This application Apr. 20, 1973, Ser. No. 352,946

Int. Cl. B23b *13/10*

U.S. Cl. 82—2.7 **7 Claims**



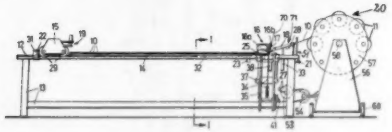
A raw material feeder for automatically feeding flexible stock, such, for example, as tubes or small-diameter rods of metal, plastic, or fiber into an automatically-controlled machine tool such, for example, as an automatic lathe. The

feeder consists of an indexing drum having a plurality of peripherally-disposed, hollow tubes, each for housing one piece of the raw stock. By means of pneumatic pressure, each unit of stock is periodically advanced into the automatic lathe for performing drilling, milling, grinding, and the like operations. When the work piece is finished, another portion of the stock is automatically advanced into the lathe. Indexing is effected also by penumatic pressure. The drum of the feeder additionally serves as an air container serving as a moisture trap. The capacity of the feeder may be as large as 2,000 feet of quarter-inch stock while having a length of 12 feet. Another embodiment of the feeder has means for rotating a special hollow feeder tube containing a piece of raw stock to be machined and disposed adjacent the lathe. This will speed up the operation of the lathe. An air sensor mechanism is also provided which makes it possible to sense when the last portion of the raw stock has been used up adjacent the machine tool's collet. Alternatively, each of the hollow tubes of the indexing drum may be rotated by a suitable mechanism to reduce the space required for the feeder system.

3,823,629
DEVICE FOR CUTTING PIECES OF FABRIC FROM FABRIC ROLLS

Rolf Bleimund, Bielefeld, Germany, assignor to Herbert Kannegiesser Kommanditgesellschaft, Vlotho/Weser, Hollwiesen, Germany

Filed Mar. 2, 1973, Ser. No. 337,504
Int. Cl. B65h *35/04*
U.S. Cl. 83—94 **26 Claims**



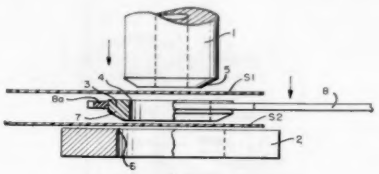
An apparatus for cutting lengths of fabric pulled from a selected roll on a rotary magazine. A transverse carriage **15** is movable along the side rails **14** of a table **12** and carries grippers **19** for pulling off a selected length of fabric. A transverse cutter **16** severs the fabric at the end of the pull and the stacked fabric layers **10** are held tightly at one end by a clamp **17.** As a length of fabric is being drawn out from a selected roll, side edge drifts are sensed and the magazine is automatically moved in a direction opposite to the drift to compensate therefor and maintain the stacked layers neatly aligned.

3,823,630
PUNCH FOR SIMULTANEOUSLY PUNCHING UNEQUAL SIZED HOLES

Heikki Samuli Suominen, Tampere, and Pekka Juhani Pyhalto, Siuro, both of Finland, assignors to Amerplast, Tampere, Finland

Filed May 24, 1973, Ser. No. 363,780
Int. Cl. B26f *1/02*
U.S. Cl. 83—98 **10 Claims**

Punch apparatus for simultaneously punching concentric but unequal sized holes in two adjacent material sheets. The punch apparatus is made up of three members: a punch, a die block, and an intermediate piece. The intermediate piece coacts with the punch and performs the function of a die block, and the intermediate piece also coacts with the die block to perform the function of a punch. The first material sheet is located intermediate the punch and intermediate piece, and the second sheet of material is located intermediate the intermediate piece and the die block. Downward movement of the punch, in cooperation with the intermediate piece, punches one hole in the sheet between the punch and intermediate piece. Downward movement of the punch also causes the intermediate piece to move downward and punch a hole in the second sheet of material, concentric with the first hole, but of a different diameter. Flexible loosening rings can

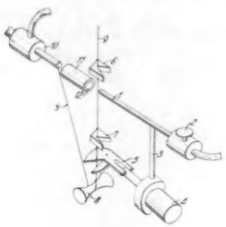


be used to facilitate removal of the punched out material. In addition to the loosening rings or alternatively in lieu thereof, the punch and die block are provided with air passages to communicate with an air supply to remove the punched out material.

3,823,631
APPARATUS FOR STRINGING A THREAD THROUGH A HOLE

Robert Reid Coats, and John Michael Greenway, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 141,705, May 10, 1971, Pat. No. 3,741,050. This application Apr. 5, 1973, Ser. No. 348,077
Claims priority, application Great Britain, May 27, 1970, 25530/70; June 9, 1970, 27840/70
Int. Cl. B65h *29/24*
U.S. Cl. 83—100 **4 Claims**



A tool for threading an advancing strand through an aperture. The advancing strand is initially entrained in a suction gun. A blowing tube which produces a fluid jet is provided to blow a loop of the advancing strand through the aperture. A cutter downstream of the blowing tube cuts the strand and the suction gun again entrains the strand after it is passed through the aperture.

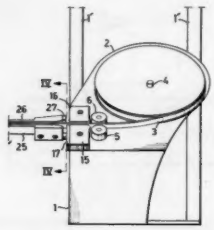
3,823,632
APPARATUS FOR CUTTING AND LOCATING FLEXIBLE BED LATHS IN A WOOD BUNDLE

Edwin Robert McDonald, Lions Bay, British Columbia, Canada, assignor to AB Hammars Mekaniska Verkstad, Nyland, Sweden

Filed Feb. 15, 1973, Ser. No. 332,688
Claims priority, application Switzerland, Feb. 22, 1972, 2150/72
Int. Cl. B26d *7/06*
U.S. Cl. 83—150 **5 Claims**

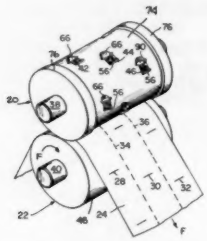
A method and apparatus for cutting and locating flexible bed laths for bundling layers of wood. Flexible lath is fed from

a roll through a groove along a guiding arm and cut into a desired length by turning of the arm. Turning of the arm is continued so that the groove opens downwardly such that the



lath drops down onto the wood to be bundled. The arm is then turned back to the initial position for receiving the next length of lath.

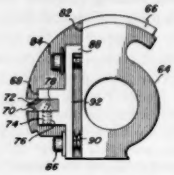
3,823,633
SELF-ADJUSTING PLURAL BLADE CUTTING ROLLER WITH CUSHIONED ANVIL ROLLER
William C. Ross, Brooklyn, N.Y., assignor to Consolidated Educational Publishing, Inc., Locust Valley, N.Y.
Filed June 5, 1972, Ser. No. 259,988
Int. Cl. B26d *1/56*
U.S. Cl. 83—346 **25 Claims**



A cylindrical cutting roller with plural cutters cooperating with a cylindrical anvil roller, in which the cutting roller has cutters arranged in rows on its cylindrical surface, said cutters having been self aligned with a setting plastic material, and the anvil roller comprising concentric deformable inner and hard outer sleeve elements along its length to cooperate with the rows of cutters on the cutting roller.

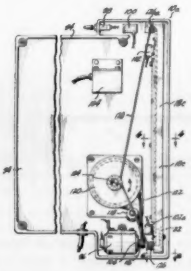
3,823,634
SPRING LOADED ROTARY KNIFE
Trygve R. Rod, Mundelein; Richard J. Ernst, Palatine, and Robert A. Davis, Gages Lake, all of Ill., assignors to Xerox Corporation, Stamford, Conn.
Filed Mar. 19, 1973, Ser. No. 342,637
Int. Cl. B23d *25/12*
U.S. Cl. 83—346 **3 Claims**

A rotary knife for use as a label cutter in an article addressing machine. The rotary knife comprises a hub member supported for rotation and having attached thereto a blade holder for removably receiving a cutting blade. The blade holder is secured to the hub in a contilevered fashion by means of a plurality of bellville washers whereby parallelism



between the blade and an anvil with which the rotary knife cooperates to both feed and cut label strip material is maintained.

3,823,635
FLAT STOCK CUTTER
Richard L. Carlson, 3601 Lemon Tree Ln., Auburn, Wash. 98002
Filed May 25, 1972, Ser. No. 256,908
Int. Cl. B26d *5/42*
U.S. Cl. 83—384 **34 Claims**

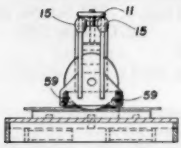


A cutter assembly wherein material to be cut passes underneath a cutter bar, a track extending under the cutter bar holds a slideable carriage, a rotatable cutter wheel mounts to the carriage, resilient means maintains the side of the cutter wheel against the face of the cutter bar, a releasable gripper bar holds the material against the underside of the cutter bar during the cutting cycle, cords attached to the slideable carriage are used to pull the carriage along the track, and means are provided to attach the assembly to a support. A cutter as above mounted in a frame, and having an electric drive motor with controls for moving the carriage is also disclosed.

3,823,636
PUNCHING APPARATUS
Ernst M. Spengler, Heusenstamm, Germany, assignor to Roeder & Spengler, Bergen-Enkheim, Germany
Filed May 12, 1972, Ser. No. 252,588
Claims priority, application Germany, May 19, 1971, 7119648; Nov. 16, 1971, 7143171
Int. Cl. B26d *1/02*
U.S. Cl. 83—511 **17 Claims**

The present roller press has a base, a center post, material supporting means, and roller means arranged in such a manner that the roller means or the material supporting means or both may be journaled about the center post whereby a relative movement between the material supporting means and the roller means is accomplished either by hand operation

or by driving means, which movement follows a circular path around said center axis. The spacing between the supporting



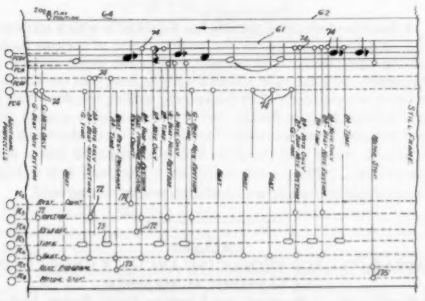
means and the roller means is adjustable to determine the cutting pressure and to accomodate material of different widths.

3,823,637

PROGRAMMED AUDIO-VISUAL TEACHING AID

Kenneth N. Scott, deceased, Toyah, Tex. (Joe Weldon Scott, administrator)

Filed Jan. 19, 1973, Ser. No. 325,187
Int. Cl. G09b *15/00*
U.S. Cl. 84—470 **21 Claims**



An audio-visual educational apparatus consisting of a master transmitting station and a number of receiving stations operated by students. In a typical embodiment for teaching music the visual portion of the lesson material, consisting of musical notation, is carried on a film strip provided with appropriately spaced programming clear spots through which light is transmitted onto photocells in the apparatus at the master station. The receiving stations have piano keyboards wherein the keys operate switches which are connected in respective counter circuits for scoring students' responses as to correct time, note and rhythm. The audio lesson material is provided by a magnetic tape player, which also programs the film strip projector and which furnishes audio instructions. An audible beat is provided as an aid to playing on time. The counter circuits are electrically interlocked with the photocells to provide scoring in accordance with proper actuation of the piano key switches. Provision is made for responses to questions of the multiple-choice type. The counters are provided with print-out mechanisms operating in unison with the projector motor. The system may be employed with the lesson material and the programming information transmitted by television.

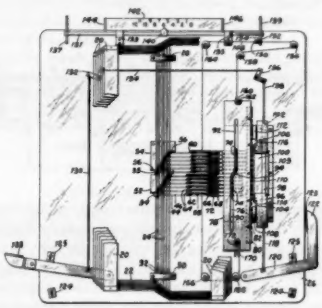
3,823,638

PAGE TURNING MECHANISM

Aldo L. Bombardi, 202 Smull Ave., North Caldwell, N.J. 07006

Filed Jan. 10, 1973, Ser. No. 322,420
Int. Cl. G10g *7/00*
U.S. Cl. 84—503 **12 Claims**

A plurality of pulleys and cables are secured respectively to a plurality of cooperating rotatable vertical wire rods which have horizontal extensions at each end and vertically disposed clear plastic strips connected between the ends for holding and turning pages. The cables are connected to horizontal slidable bars which are controlled by movement of a vertical cam plate, rack and pawl mechanism in one direction to turn



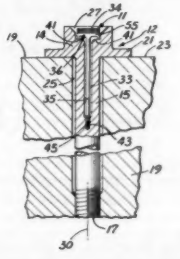
individual rods and pages from right to left upon each movement of a first lever. A second lever and linkage and oppositely acting pawl, rack and cam turn the rods and page holders in the reverse direction from left to right. A rapid turning mechanism can successively turn all of the rods back and forth while bypassing the lever and pawl mechanism.

3,823,639

TENSION INDICATING FASTENER

Theodore Liber, Chicago, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Nov. 24, 1972, Ser. No. 309,053
Int. Cl. G01d *21/00*
U.S. Cl. 85—62 **12 Claims**

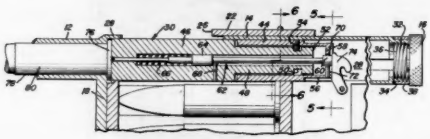


Fasteners such as mine bolts are provided with tension indicators to directly read tension in the shank of the bolt. The preferred tension indicators comprise an elongated pin disposed in a bore formed in the bolt and connected at the bottom of the bore to the bolt shank to be tensioned thereby. The tension indicator further comprises a cross bar attached to the other end of the pin and extending laterally into engagement with another portion of the bolt, such as the head of the bolt, to be bent upon tensioning of the pin. Preferably, a photoelastic member is attached to the cross bar and bending stresses in the cross bar are manifested in the photoelastic member in the form of photoelastic fringes for reading by a reflection polariscope.

3,823,640
GAS OPERATED BOLT MECHANISM

Doyle E. Segrest, Woodville, Tex., assignor to Texas Automatics, Inc., Woodville, Tex.

Filed Oct. 3, 1973, Ser. No. 402,985
Int. Cl. F41d 5/04, 11/16
U.S. Cl. 89—154 7 Claims

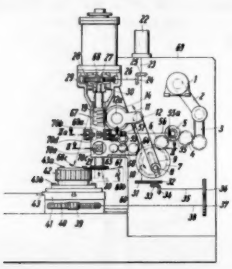


A gas operated bolt carrier imparts reciprocating movement to a bolt body through a locking sleeve angularly displaceable on the bolt to a striker blocking position thereby preventing firing when the bolt is displaced from its battery position. A locking slot formed in the receiver prevents angular movement of the locking sleeve following initial retraction of the bolt from the battery position by the bolt carrier.

3,823,641
GEAR SHAPING APPARATUS WITH MEANS FOR LIFTING CUTTER WHEEL RELATIVE TO THE WORK PIECE

Walter Seiberlich, Ettlingen/Baden, Germany, assignor to Maschinenfabrik Lorenz AG, Ettlingen/Baden, Germany

Filed Sept. 27, 1972, Ser. No. 292,800
Claims priority, application Germany, Sept. 30, 1971, 2148801
Int. Cl. B23f 5/16
U.S. Cl. 90—7 16 Claims

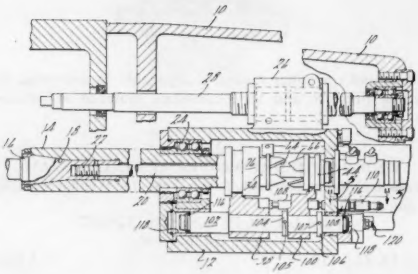


In a gear shaping apparatus, an arrangement for moving a cutter wheel spindle relative to the work piece between a cutting stroke path and either of two return stroke paths on either side of the cutting stroke path. Adjacent a pair of contact surfaces movable with the spindle is a cam rotatable synchronously with the axial spindle movement and mounted on an eccentric shaft which is mounted in the machine frame, such that turning of the eccentric shaft brings the cam to one or the other of the contact surfaces to move the spindle either between the cutting stroke path and one return stroke path or between the cutting stroke path and the other return stroke path, respectively. The cam generally moves the spindle to the cutting stroke path and each of a pair of opposed return means such as for example a spring are made operable to move the spindle to one or the other of the return stroke paths, respectively, to lift the cutter wheel relative to the work piece for the return stroke.

3,823,642
POWER DRAW BOLT

Richard A. Jerue, Birmingham, Mich., assignor to Devlieg Machine Company, Royal Oak, Mich.

Filed Sept. 1, 1972, Ser. No. 285,605
Int. Cl. B23q 3/12
U.S. Cl. 90—11 D 12 Claims

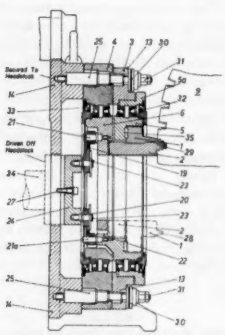


A machine tool drive spindle has a socket in which tools are interchangeably seated for the performance of various metal cutting operations. A draw bolt within the drive spindle is threadable into the rear end of a tool to hold it in the socket. In order to secure a tool in the spindle socket, the draw bolt is first rotated by a hydraulic motor to threadably engage the tool and seat it in the socket. Thereafter, a clutch between the hydraulic motor and the draw bolt is disengaged and a substantial axial pulling force is applied to the draw bolt to hold the tool against its seat with a predetermined clamp load.

3,823,643
APPARATUS FOR PRODUCING ARCUATE GROOVES IN A CYLINDRICAL MEMBER

Alfred Feucht, Dubendorf, and Vincenco Guidi, Baden, both of Switzerland, assignors to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Continuation of Ser. No. 58,801, July 28, 1970, abandoned.
This application Dec. 14, 1972, Ser. No. 315,236
Int. Cl. B23c 3/28
U.S. Cl. 90—15 A 10 Claims



The method of machining a profiled arcuate groove such as on the rotor of a turbo-machine to provide a mounting for the rotor blading comprises the steps of advancing into the groove a cutting head having two rotary cutters the respective cutting edges of which are directed in opposite directions and simultaneously machine the opposite flanks of the groove, gradually

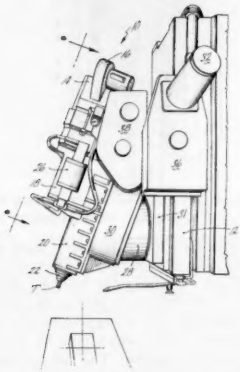
increasing the spacing between the cutting edges as machining of the groove flanks progresses and thereafter decreasing the spacing between the cutting edges in conjunction with extraction of the cutters from the groove.

3,823,644

SWIVEL HEAD ASSEMBLY FOR FIVE AXIS MACHINE TOOL

William R. Mello, Westminster, Calif., assignor to Colt Industries Operating Corp., West Hartford, Conn.

Filed Jan. 30, 1973, Ser. No. 328,095
Int. Cl. B23c *1/12, 1/16*
U.S. Cl. 90—17 **4 Claims**



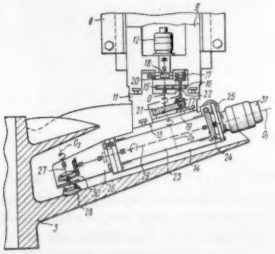
A five axis profiler has swivel head assembly attached to a vertical slide. The swivel head assembly includes a support, a first rotary slide mounted upon the support for rotation about a first axis, a second rotary slide mounted upon the second rotary slide for rotation about a second axis which crosses the first axis intermediate the respective rear and front ends of the first and second rotary slides to define an acute angle, and a spindle head fixedly secured to the second rotary slide. The spindle head may be rotatably positioned by rotating the first rotary slide and may be tilted by simultaneously rotating the first and second rotary slides in opposite directions. Worm gear arrangements are provided for rotating the rotary slides.

3,823,645

MILLING MACHINE

Ivan Alexeevich Sukhov, Pudozhskaya ulitsa 4a, kv. 22; Nikolai Matveevich Sjundjukov, Shkolnaya ulitsa 3, kv. 15, and Igor Nikolaevich Soloviev, ulitsa Stoikosti, 2/11, kv. 227, all of Leningrad, U.S.S.R.

Filed May 23, 1973, Ser. No. 363,049
Int. Cl. B23c *3/18*
U.S. Cl. 90—17 **7 Claims**



A milling machine is designed for machining the curved surfaces of propelling screws and comprises a turntable with the screw set on it and a fixed gantry along the horizontal guide of which two carriages move to mount bars capable of vertical movement.

The lower end face of each bar gets in contact with a vertical cylindrical insert turnable round its axis.

The lower end face of the insert is made inclined to the horizontal plane.

An overarm is connected to the lower end face of the insert. The longitudinal axis of the overarm is parallel to the lower end face of the insert.

A spindle head with a milling cutter held therein is connected to the overarm coaxially to its longitudinal axis.

The spindle head is capable of turning round the longitudinal axis.

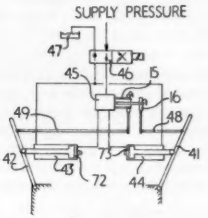
A milling cutter rotation drive is mounted on the overarm.

3,823,646

SYNCHRONIZING VALVES

Geoffrey Wadsworth, c/o Fort Dunlop, Erdington, Birmingham B24 9Qt, England

Filed May 17, 1972, Ser. No. 254,097
Claims priority, application Great Britain, May 26, 1971, 17080/71
Int. Cl. F01b *25/04;* **F15b** *11/22*
U.S. Cl. 91—171 **5 Claims**



A synchronizing valve, for controlling the flow of fluid to and from two fluid pressure actuated components so as to synchronizing their movements, in which a housing incorporates two relatively movable members, one member being provided with a cam profile and being arranged to be operatively connected to one fluid pressure actuated component so that movement of the component causes corresponding movement of the member and the other member being provided with a cam follower and similarly being arranged to be operatively connected to the other fluid pressure actuated component. Relative movement of the two members and hence of the cam profile and follower, resulting from non-synchronous movement of the fluid pressure actuated components, is arranged to actuate a flow proporting valve means positioned within the housing thereby adjusting the flow of fluid to or from the fluid pressure actuated components to re-establish synchronous movement.

3,823,647

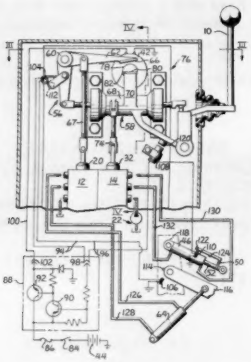
ELECTROMAGNETIC BUCKET POSITIONER FOR HEAVY EQUIPMENT VEHICLES AND THE LIKE

Trevor G. Campbell, Peoria, and James W. Russey, Decatur, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 29, 1972, Ser. No. 284,491
Int. Cl. F15b *13/16*
U.S. Cl. 91—358 A **8 Claims**

An electromagnetic bucket positioner includes an electromagnet disposed to selectively latch, when energized, a control valve of a bucket positioning system. A normally-open switch is included in the system, and is adapted for closure via selected movement of a manually operable control lever,

thereby energizing the electromagnet to latch the control lever in the select position. A normally-closed switch is disposed in series with the normally-open switch, and is adapted to be opened upon selected translation of the cylinder rod of the associated hydraulic cylinder, to thus interrupt current flow to the electromagnet, to de-energize same and release the control lever. The control valve returns to a



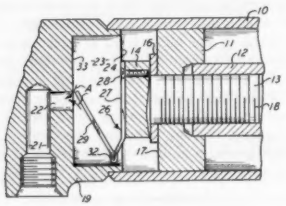
neutral position, stopping the flow of hydraulic fluid to the respective cylinder, to stop further movement, tilt, etc., of the vehicle bucket. An electronic relay circuit may be included to introduce current to the electromagnet when energized via closure of the switches. In the latter embodiment, the relay circuit is de-energized after the electrical circuit is interrupted by opening the respective normally-closed switch.

3,823,648

FLUID CYLINDER UNIT CUSHION STRUCTURE

Evans L. Clarke, Sherrard, Ill., and Joseph T. Kulhavy, Davenport, Iowa, assignors to J. I. Case Company, Racine, Wis.

Filed Apr. 9, 1973, Ser. No. 348,977
Int. Cl. F15b *15/22*
U.S. Cl. 91—395 **6 Claims**



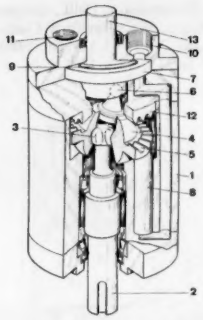
A fluid cylinder unit cushion structure having a cylinder with a piston slidable therein against a stop to presen.. a space between the head end of the cylinder and the piston. The fluid port is in the cylinder head end, and the piston carries a spring type of valve which seats over the fluid port when the piston is in its end limit position at the head end. The spring also has clearance for moving off the fluid port when the piston is in its end limit position and when the fluid pressure is reversed to get flow into the cylinder through the port and thereby return the piston for movement in the opposite direction.

3,823,649

ROTARY HYDRAULIC DEVICE WITH NUTATING GEAR

Knut Ivar Berg, Ulaxgatan 32, Motala, Sweden

Filed July 26, 1972, Ser. No. 275,272
Claims priority, application Sweden, Aug. 3, 1971, 9909/71
Int. Cl. F01b *3/02, 3/10*
U.S. Cl. 91—480 **5 Claims**



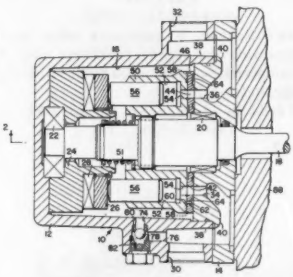
In a reduction gear for a hydraulic motor there is a stationary gear ring in the motor housing. For engagement with this stationary gear ring is a nutating disc having a gear ring on its one side and in its center being coupled to an output shaft. On its other side the nutating disc is engaged by pistons under influence of a hydraulic liquid, which give the nutating disc a wobbling and rotating movement. The last mentioned part of this movement is both transferred to a distributing disc controlling the supply of hydraulic liquid to the pistons and also being transferred to the output shaft, which is driven at a reduced speed in relation to the distributing disc.

3,823,650

DESTROKING OF HYDROSTATIC DRIVE MOTORS

Curtis Phillip Ring, and Billie Gene Hunck, both of Cedar Falls, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Nov. 2, 1972, Ser. No. 303,148
Int. Cl. F01b *13/04*
U.S. Cl. 91—497 **9 Claims**



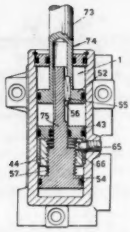
The cylinder barrel bearing face of an axial piston fluid motor is provided with a plurality of generally radially extending grooves whose inner ends are in communication with a source of low-pressure fluid. During periods when the motor is disconnected from a high-pressure source of fluid and the motor is driven mechanically, the grooves operate as a centrifugal pump which pressurizes the crankcase of the motor to hold the pistons off the cam.

3,823,651

HYDRAULIC ASSEMBLIES

Martin Bruce Ogilvie, Yardley Wood, England, assignor to Girling Limited, Birmingham, England

Filed July 26, 1972, Ser. No. 275,350
Claims priority, application Great Britain, Aug. 6, 1971, 37051/71
Int. Cl. F01b 21/00
U.S. Cl. 92—2 5 Claims



A repeater transmission comprises two similar hydraulic assemblies and transmits both linear and rotary movement. In each assembly, there is a first piston immovable on a piston rod and a second piston engaged with the piston rod by a fast-thread arrangement such that axial movement of the second piston along the rod causes the rod to rotate and rotation of the rod causes the second piston to move along the rod.

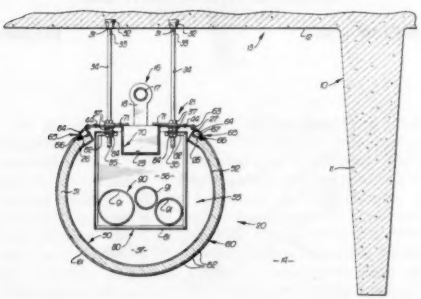
In a second embodiment, the second piston is engaged non-rotationally with, but slidably on, the rod and is engaged with an internally fast-threaded collar which is non-rotational in the cylinder.

3,823,652

AIR CONDUIT AND DIFFUSER ASSEMBLY

Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Covina, Calif.

Filed Jan. 12, 1970, Ser. No. 2,112
Int. Cl. F24f 13/06
U.S. Cl. 98—40 C 33 Claims



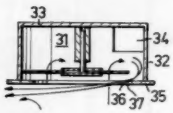
An air conduit and diffuser assembly for use in a room below the room ceiling in full view includes a conduit with a central cavity to conduct air into the room and openings through the conduit to diffuse the air throughout the room, the conduit being attached by rods extending between the ceiling and the upper portion of the conduit. The preferred embodiment includes a cavity in the upper portion for mounting a light fixture or the like, a utility channel in the central cavity to carry utilities into the room, and both metering and diffuser opening in the upper half of the conduit to direct the flow of air downwardly along the outside of the conduit. An alternative exemplary embodiment has a universal upper portion with the diffuser openings therein which accepts various sizes of lower portions for different central cavity sizes.

3,823,653

FLUID DISTRIBUTING DEVICE

Yngve Gustav Sigvard Roos, Stockholm, Sweden, assignor to AR-VENTILATION AB, Stockholm, Sweden

Filed Sept. 28, 1972, Ser. No. 293,158
Claims priority, application Sweden, Oct. 4, 1971, 12489/71
Int. Cl. F24f 13/06
U.S. Cl. 98—40 B 12 Claims



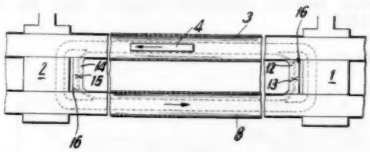
This invention pertains to a device for distributing a fluid, such as air, to a surrounding space in a selected air distribution pattern. The device is of the type with which the medium to be distributed is imparted a circulatory motion upon entering the device, wherewith a sub-pressure zone is created in the centre of the device as the result of air being drawn from the region of said zone by the circulating air mass. An axially and radially adjustable regulating means is arranged in the vicinity of the medium outlet of the device to define a gap through which the medium must pass when leaving the device, the regulating means being so constructed that adjustment thereof causes a change in the resistance of fluid flow through the gap and in the distribution pattern of the medium issuing therethrough.

3,823,654

VENTILATING SYSTEM FOR SUBWAYS

Franz Swaty, Wien, Austria, assignor to Stadt Wien, Vienna, Austria

Filed Sept. 13, 1972, Ser. No. 288,697
Claims priority, application Austria, Sept. 16, 1971, 8068/71
Int. Cl. E01g 7/02
U.S. Cl. 98—49 17 Claims



In a subway ventilating system where two stations are connected by a pair of tunnel tubes, a cross-connection is provided between the tubes adjacent each of the stations. The cross-connections are not open to the outside atmosphere. Fans are located in the cross-connections for withdrawing a fractional amount of the air pushed ahead of the train as it moves through one of the tubes and for injecting it through a nozzle into the other tube in the direction toward the station from which the train departed. Due to the injection of a portion of the air into the other tube, the remaining portion of the air pushed ahead of the train is pulled into the other tube and is directed back toward the station from which the train departed. Further, for ventilating the tunnel tube and the station, a ventilating shaft is located in a mid-portion of the tubes intermediate the stations for withdrawing air from the tubes and directing it into the outside atmosphere and for pulling air in from the outside atmosphere and circulating it into the tubes.

3,823,655

WINE-MAKING APPARATUS

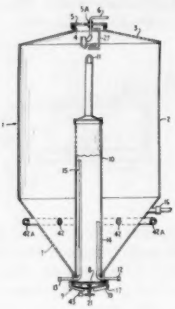
Ronald Anthony Potter, Lenehan Rd., Griffith, New South Wales, Australia (2680)

Filed Oct. 26, 1972, Ser. No. 300,994

Claims priority, application Australia, Oct. 28, 1971, 6831/71

Int. Cl. C12c *11/04*; C12g *3/00*

U.S. Cl. 99—277 14 Claims



Apparatus adapted for use in wine making, and functioning at least partly in the process of making red and white wines, and comprising a vessel including at least a sidewall, a downwardly convergent floor having an opening permitting the removal of the residual grape skins, a door normally closing the opening, means permitting the insertion of raw materials and at least one means permitting the removal of the processed grape juice.

3,823,656

SINGLE-USE COFFEE FILTERS

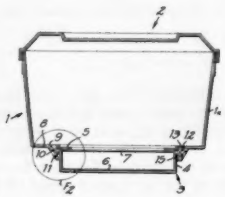
Germaine Vander Veken, Vrijheidslaan 171, 1080 Brussels, Belgium

Filed Sept. 18, 1972, Ser. No. 289,933

Claims priority, application Belgium, Apr. 26, 1972, 78264572

Int. Cl. A47j *31/10*, *31/06*

U.S. Cl. 99—295 13 Claims



A single-use throw-away coffee filter comprising a water receiving filtering body having a bottom which is substantially constituted by a cartridge or capsule containing coffee and a filter element, the improvement comprising means to provide a sealing fit and to prevent relative movement between the filtering body and capsule, especially during the brewing of coffee.

3,823,657

STEAM PRESSURE COOKER WITH SAFETY DEVICE

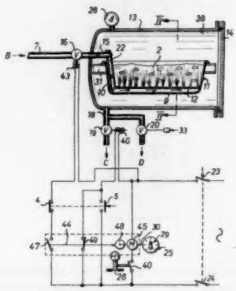
Hans Luetolf, Meggen, Switzerland, assignor to Salvis AG, Reussbuhl, Switzerland

Filed Feb. 13, 1973, Ser. No. 332,110

Claims priority, application Switzerland, Feb. 17, 1972, 2312/72; Austria, Mar. 3, 1972, 1824/72

Int. Cl. A47j *27/09*

U.S. Cl. 99—337 6 Claims



In a steam pressure cooker into which externally generated steam is introduced to build up a gauge pressure at which the cooking process is greatly accelerated. Safety means preventing the access door of the pressure vessel from being manually opened when the vessel is still under pressure and the steam admission valve from being opened when the door is not properly secured by the locking engagement of a latch.

3,823,658

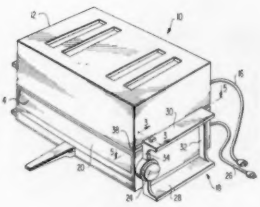
TOASTER-BROILER STACKING UNIT

Louis Pinchot, 8101 Southwest 72nd, Miami, Fla. 33143

Filed Oct. 13, 1972, Ser. No. 297,386

Int. Cl. A47j *37/08*

U.S. Cl. 99—340 12 Claims



The unit includes a toaster adapted for releasable superposition over a broiler. A stacking frame is secured to and supports the broiler when used separately and the toaster-broiler unit when stacked. The frame is secured at the opposite ends of the broiler and, at each end, includes a lower base and an upper track having an inwardly extending tongue. The opposite ends of the toaster are grooved to receive the tongues upon lateral registration of the tongues and grooves. Each track is provided with a locking device for releasably securing

the toaster to the broiler when stacked thereover. To remove the toaster from the broiler for separate use of one or both of the toaster and broiler, each upper track is provided with a push button. Upon depression of the button, the locking device is released permitting the toaster to slide laterally from the frame and from its stacked position over the broiler.

3,823,659

APPARATUS FOR PREPARING A NON-PACKAGED EGG PRODUCT

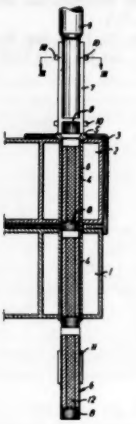
Vladimir Hubka, Winterthur, Switzerland; Henning Rehhoff, Greve Strand, and Mogens Myrup Andreasen, Copenhagen, both of Denmark, assignors to Instituttet for Produktudvikling, Lyngby, Denmark

Continuation-in-part of Ser. No. 160,634, July 8, 1971, abandoned. This application Oct. 19, 1972, Ser. No. 298,912

Claims priority, application Netherlands, July 15, 1970, 703670

Int. Cl. A47j *43/20*

U.S. Cl. 99—353 **15 Claims**



An apparatus for preparing a non-packaged egg product comprising a cylindrical core of coagulated yolk mass surrounded by a shell of coagulated egg white mass. The apparatus comprises a heating chamber and preferably also a cooling chamber located below the heating chamber and mechanically connected thereto. Longitudinally slitted molds of a resilient sheet material are closed around a bottom member thereof and introduced in tubes traversing the heating chamber. A separator tube is inserted in each mold whereupon yolk and egg white mass are supplied to the two compartments of the mold internally and externally of the separator tube, respectively. After a preliminary coagulation the separator tube is withdrawn and after final coagulation the mold is transferred to the cooling chamber and later ejected therefrom, whereby the resilient mold opens and releases the finished egg product. Means may be provided for cleaning the separator tube externally and internally during the withdrawal thereof from the mold. In an alternate arrangement the egg white is first injected into the space between the mold and separator tube and allowed to partially coagulate. The separator tube is then withdrawn and the egg yolk is thereafter injected into the central cavity defined by the egg white.

3,823,660

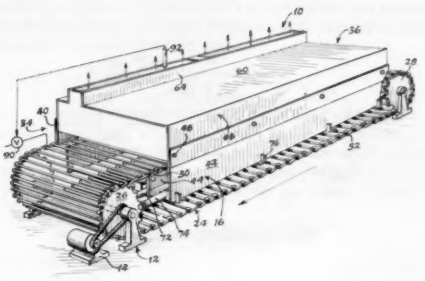
RADIANT TUNNEL

Carl H. Nerthling, 1026 W. 35th St., Erie, Pa. 16508

Filed Oct. 2, 1972, Ser. No. 293,762

Int. Cl. A47j *37/04*

U.S. Cl. 99—386 **12 Claims**



A device for cooking meat products and in particular solid frozen hamburger patties within less than a minute without loss of flavor and juices; the device employing gas burner heated metal screens vertically bounding a hamburger patty transport conveyor.

3,823,661

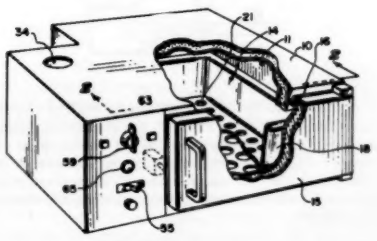
APPARATUS FOR THAWING FOOD

Edward L. Kells, Batavia, Ill., assignor to Dover Corporation, New York, N.Y.

Filed Sept. 22, 1972, Ser. No. 291,311

Int. Cl. A23l *1/00*

U.S. Cl. 99—468 **7 Claims**



Relatively low pressure steam is forced through an area within which lumps of frozen vegetables are located. Initally, steam is supplied at a relatively high rate, with the rate being reduced after the ice has been thawed from the surface of the vegetables. The condensate along with any other liquids present are withdrawn from the area in which the vegetables are located. As the surface ice is removed from the vegetables, the steam supply is automatically reduced.

3,823,662

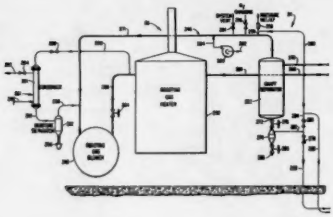
ROASTING APPARATUS

Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.

Division of Ser. No. 137,247, April 26, 1971, Continuation-in-part of Ser. No. 44,464, June 8, 1970, Pat. No. 3,615,668. This application Aug. 11, 1972, Ser. No. 279,748

Int. Cl. A23l *1/02*; A23n *15/00*

U.S. Cl. 99—468 13 Claims



Apparatus for roasting particulate solids which includes a system for heating and circulating a fluid through a roasting vessel, and arrangements for supplying material to be processed to and discharging it from the reactor. Methods for roasting particulate solids.

3,823,663

COMPRESSING APPARATUS HAVING A PORTIONING DEVICE

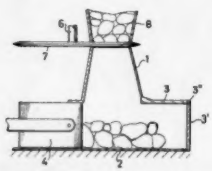
Toni Reifenhaeuser, Burglahr, and Helmut Maus, Oberlahr, both of Germany, assignors to Toni Reifenhaeuser, Burglahr, Germany

Filed May 9, 1972, Ser. No. 251,808

Claims priority, application Germany, May 14, 1971, 2123906

Int. Cl. B30b *15/08*

U.S. Cl. 100—97 6 Claims



The present portioning device has a metering chamber and a compression chamber in which the material metered in the metering chamber is compressed. An intermediate chamber having a volume larger than the metering chamber is arranged for receiving the yet uncompressed but metered portion to locate such portion for compressing transfer into the compression chamber.

3,823,664

INFLATED BAG PRINTER AND METHOD

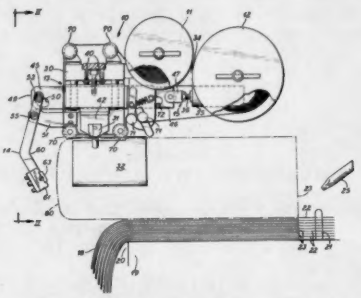
James L. Shenoha, Lockport, Ill., assignor to Norwood Marking & Equipment Co., Inc., Downers Grove, Ill.

Filed May 10, 1973, Ser. No. 358,962

Int. Cl. B41f *17/00*

U.S. Cl. 101—41 7 Claims

A method and device for imprinting indicia such as price and code data on an inflated bag which involves the steps of first inflating a bag by an air jet, second deflating a portion of the inflated bag, third printing indicia on a portion of the deflated portion. The apparatus includes an air jet for inflating the bag to a position underlying a marker type face and an anvil movable to contact a portion of the bag and to collapse a portion of the bag while urging a surface portion of the collapsed portion against the marking face.



3,823,665

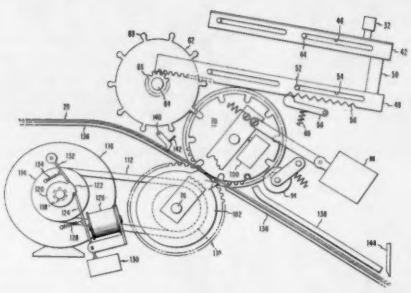
LABEL PRINTING MACHINE

Wilbur M. Davis, and Robert E. Yates, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1972, Ser. No. 317,018

Int. Cl. B41j *7/06*

U.S. Cl. 101—66 1 Claim



A machine for printing a strip of connected labels including a stack of co-axially disposed print wheels, a series of print wheel setting knobs disposed on an exterior surface of the machine and drivingly connected respectively with the print wheels by means of toothed intermediate wheels and racks and pinions for rotatably adjusting the individual wheels, a solenoid for moving the print wheels out of engagement with the intermediate wheels, and a feed wheel having a print backup boss disposed to have a nip with printing surfaces of the print wheels so that the label stock is printed as the backup boss makes a nip with printing surfaces on the print wheels as the print wheels are collectively rotated with corresponding rotation of the feed wheel.

3,823,666

VALUE DISPENSING MECHANISMS

Walter J. Hanson, Old Greenwich, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

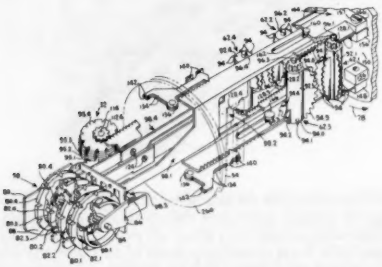
Division of Ser. No. 91,800, Nov. 23, 1970, Pat. No. 3,731,068. This application Apr. 16, 1973, Ser. No. 351,137

Int. Cl. B41j *7/09*

U.S. Cl. 101—91 15 Claims

A postage meter having a mechanism which is rotatable to print a postage impression of a selected value. A mechanism

for setting the postage value is provided, and is assembled with the printing mechanism for rotation therewith. This setting mechanism includes selector wheels which are coaxially rotatable, and setting bars which are longitudinally translatable in response to rotation of the selector wheels. Economic accountability is assured by postage registers having four drivable decimal orders, and input pinions for each such order. The setting mechanism has four adjustable register-driving gear clusters which are normally disengaged from the register pinions, but engage them during printing. Mechanisms are provided for choking the register, and for clamping the choke devices to provide positive register locking when the driving gear clusters are disengaged from the pinions. The setting bars comprise an assembly of individual bar members,



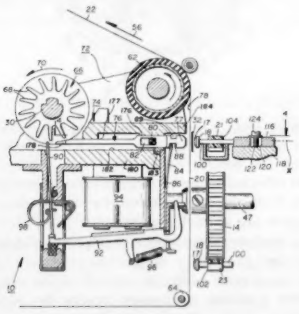
pairs of which are connected together for joint translation. The bars are nested in a unique way, and are formed with respective gear tooth racks which adjust the register-driving gear clusters and set the numerical value of the postage printing wheels. Rectification is accomplished by pawls which engage the setting bar racks, and have a mutually interlocking relationship with a shutter disk. This interlock operates either to disable the meter trip mechanism, and thus prevent postage printing operation, when the setting bars are not in rectified position; or to lock the setting bars during a postage printing cycle. A deadlock latch, which acts as an intermediate link between the shutter disk and trip mechanism, also blocks the trip mechanism when the descending postage balance is low, or the register compartment access door is open.

3,823,667

FORCE ADJUSTMENT IN IMPACT PRINTERS

Egon S. Babler, Northbrook, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed July 3, 1972, Ser. No. 268,237
Int. Cl. B41j 9/12
U.S. Cl. 101—93 C **27 Claims**



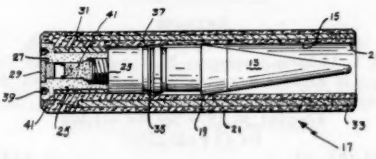
A plurality of self-restoring equally spaced apart print hammers selectively are driven lineally toward a printing position by continuously rotating impellers having equiangularly spaced radial impelling elements. Each impeller is effective through the agency of a rockable interponent, which is selectively elevated into the path of associated impelling elements upon latching of the armature of an electromagnet, for transmitting impeller force to a corresponding print hammer. An elastomeric bumper, disposed in the path of the print hammers, dampens printing force on dies, which are conveyed past said hammers for printing, in equally spaced relationship different from the spacing of said hammers. Each die, when at a printing station. is aligned with a print hammer but spaced therefrom a distance inversely proportional to its printing area for producing copy of uniform intensity.

3,823,668

DUPLEX COMBUSTIBLE CARTRIDGE CASE

Robert F. Remaly, Olympia Fields; Milton S. Nusbaum, Chicago; Kenneth G. Johnson, Aurora, and Seymour Levine, Chicago, all of Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 19, 1972, Ser. No. 298,977
Int. Cl. F42b 5/02
U.S. Cl. 102—38 R **2 Claims**



A combustible cartridge case for use with a fully telescoped round of ammunition wherein the case is of a laminated type construction with a cylindrical molded grain propellant sandwiched between a double wall combustible case of felted nitrocellulose thereby adding considerable physical strength to the cartridge. A supplementary cylindrical charge of molded propellant is positioned in the rear portion of the case surrounding the outer wall of the igniter located aft of the projectile.

3,823,669

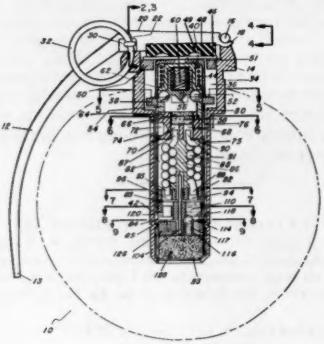
FAIL-SAFE HAND GRENADE

Alexey T. Zacharin, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 29, 1973, Ser. No. 327,518
Int. Cl. F42b 27/02
U.S. Cl. 102—64 **4 Claims**

This invention relates to a completely sealed improved hand grenade fuze having an out-of-line detonator held in a safe position by two independent safing elements. The present invention includes a formed latching member for preventing the inadvertent removal of the grenade initiating handle, puncturable sealing foil to prevent malfunctions due to accumulations of mud and ice, a compliant element intermediate the handle and the sealing foil, a spring biased detent cap for penetrating the sealing foil upon release of the safety handle and for mechanically releasing a rotor housing. The rotor housing, after mechanical release by the biased detent cup, is first rotated by a short delay cord which activates a gas generating charge forcing the rotor to turn from a "safe" out-

of-line position to an "armed" in-line position. The detonator in the in-line position is initiated by a long delay cord which is ignited simultaneously with a short delay cord. The detent cap



releases a biased firing pin causing it to strike a primer which initiates the dual delay cords. The initiated detonator in the in-line position activates an explosive train causing detonation of the grenade.

3,823,670

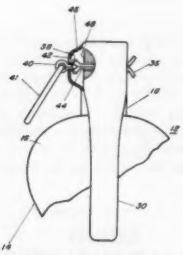
HAND GRENADE TRIGGER SAFETY LOCK

Alexey T. Zacharin, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 30, 1973, Ser. No. 411,108

Int. Cl. F42b *27/00*

U.S. Cl. 102—64 **2 Claims**



The present invention relates to a safety device for conventional hand grenades. The safety device comprises a double headed cotter pin which is automatically locked in a safe position by the lever handle and can be removed by the thrower, when desired, to arm the grenade.

3,823,671

SYSTEM FOR TRANSFER ØF GOODS ON RAILROAD TRAINS WHEN IN MOTION

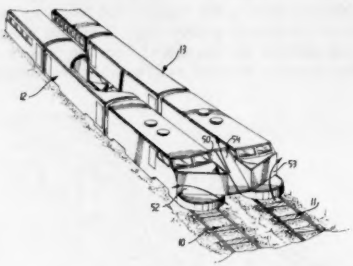
O. Robert Straumsnes, 1 Bryant Crescent, White Plains, N.Y. 10605

Filed Mar. 16, 1973, Ser. No. 342,056

Int. Cl. B61k *1/00*

U.S. Cl. 104—18 **6 Claims**

A system interlocking trains whereby passengers and/or goods may be transferred therebetween while the trains are in motion. The system includes means for interlocking a train travelling on a main line with a train travelling on a local line, and means for providing transfer of passengers and/or goods therebetween while the trains are in motion. Local trains run on local lines spaced at desired locations along the main lines. After the transfer of passengers and/or goods is completed, the trains are decoupled, whereby the main train continues en route and the local train may be unloaded. Wind deflectors are provided to deflect any wind factor which might develop during transfer of passengers and/or goods. Floors are ex-



tended laterally from the side of each train to form a passenger bridge to transfer passengers therebetween. The bridges are provided with curtain roofs which are extendable from the top of each train. Prior to disengagement of the trains, the curtain roof is moved into contact with its respective floor and, as the floor is retracted back into its respective train, the curtain roof moves therewith to assure that no passengers are left on the bridge as the extendable floors are retracted.

3,823,672

HIGH SPEED GROUND TRANSPORTATION SYSTEMS

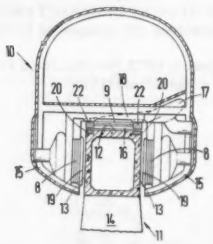
Thomas George Fellows, Barnet; David John Ivor Garstin, Newmarket, and Michael Charity, Cambridge, all of England, assignors to Tracked Hovercraft Limited, London, England

Filed July 7, 1972, Ser. No. 269,831

Claims priority, application Great Britain, July 15, 1971, 33393/71

Int. Cl. B61b *13/00*

U.S. Cl. 104—148 MS **9 Claims**



In a transportation system comprising a prepared track and a vehicle having levitation means such as an air cushion for supporting the vehicle above the track, roll control of the vehicle is effected by on or more pairs of electromagnets co-operating with magnetic material extending along the track. The magnets are normally energised so as to exert a substantially constant downward force in opposition to but less than upward forces exerted by the levitation means, and means are provided responsive to forces exerted on the vehicle tending to produce a rolling movement thereof for controlling the energisation of the electromagnets so that they act differentially to counteract a rolling movement of the vehicle. Further pairs of magnets comparably controlled may be provided to guide the vehicle.

3,823,673

CONVEYOR INSTALLATION WITH INDIVIDUAL RAIL-BOUND SELF-PROPELLING VEHICLES OR VEHICLE GROUPS

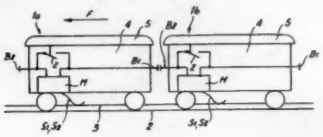
Erich Wesener, deceased, late of Munchen-Obermeinzing, Germany (by Renate Wesener and Oliver Wesener, heirs), assignor to Buro Patent AG, Glarus, Switzerland

Filed Aug. 11, 1972, Ser. No. 280,077

Claims priority, application Switzerland, Aug. 13, 1971, 11919/71

Int. Cl. B60l *3/04*

U.S. Cl. 104—148 R **11 Claims**



A conveyor installation embodying individual rail-bound self-propelling vehicles or vehicle groups, wherein each vehicle is equipped with a drive motor supplied with power via current rails. The vehicles or vehicle groups possess at both ends a respective contact element essentially located at the same height and at least the contact element which is rearwardly located with regard to the direction of travel has current supplied thereto. The front contact element is coupled with a switching element located at the drive current circuit of the drive motor and interrupts the drive current of the drive motor at least for such length of time as, viewed in the direction of travel, the front contact element touches the rear contact element of a similar type vehicle or vehicle group located forwardly in the direction of travel.

3,823,674

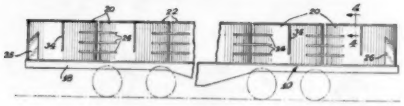
BIN TYPE FREIGHT CAR

Barry E. Dupre, Lansing, Ill., assignor to North American Car Corporation, Chicago, Ill.

Filed Dec. 20, 1971, Ser. No. 209,579

Int. Cl. B60p *1/64*; **B65j** *1/02*

U.S. Cl. 105—366 R **13 Claims**



A vehicle having a flat deck provided with a plurality of upwardly open bins or cells, with each bin or cell dimensioned for receiving, supporting and transporting an individual self-contained, flexible, collapsible container filled with flowable material.

3,823,675

CEILING SUPPORTED LOAD SPACER

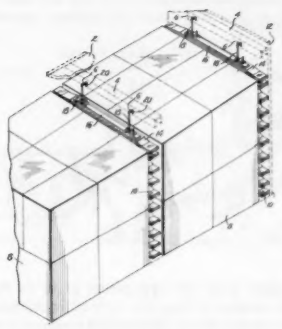
Larry Farley, Woodland, Wash., assignor to Narad, Inc., Wayne, Mich.

Filed Apr. 6, 1973, Ser. No. 348,665

Int. Cl. B61d *45/00*

U.S. Cl. 105—369 B **4 Claims**

A spacer for filling spaces, in a freight vehicle or container, between a side of a stack of articles of freight and another surface in the container, in the form of a lightweight expandable honeycomb structure, expandable in a vertical direction between said surfaces and suspended therein by hanger members engaging supports on the container ceiling.



3,823,676

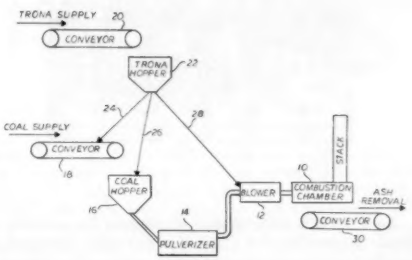
METHOD OF REDUCING SULPHUR DIOXIDE EMISSIONS FROM COAL

Webster Warren Cook, and James A. Maitland, both of c/o Warren Cook Chemical, Inc., Monee, Ill. 60449

Filed Oct. 10, 1972, Ser. No. 296,147

Int. Cl. F23b

U.S. Cl. 110—1 J **8 Claims**



A method of reducing sulphur dioxide emissions from coal by adding an effective amount of Wyoming Trona to the coal for combining with sulphur in the coal to form a relatively heavy ash which is collected with other heavier ash for removal in the usual way.

3,823,677

GRAVITY FLOW INCINERATOR

Edwin Mark Polsak, South Euclid, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

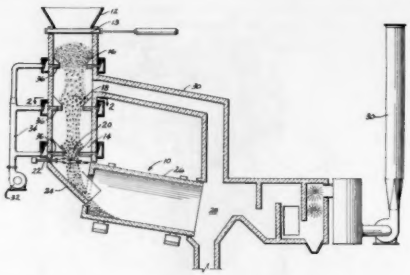
Filed Dec. 15, 1972, Ser. No. 315,742

Int. Cl. F23g *5/12*

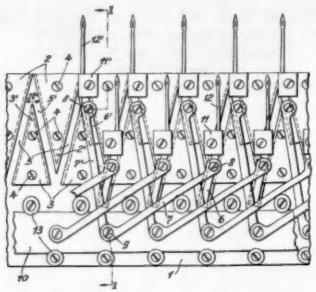
U.S. Cl. 110—8 C **4 Claims**

A gravity flow incinerator for burning refuse, trash, and industrial wastes, etc. including an upright vertical chamber having grates vertically spaced throughout the height of the unit. Each grate is inclined downwardly and inwardly towards

a central opening. Air is fed to each of the openings through the grate itself. The central openings in the grates are progressively smaller from the uppermost grate to the lowermost grate. The residue leaving the vertical incinerator is fed to a rotary incinerator where combustion is completed.



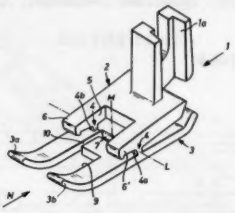
3,823,678
AUTOMATIC COLOR-CHANGE MECHANISM FOR SHUTTLE EMBROIDERING MACHINE
August Langenegger, 97 Tambett St., Melbourne, Australia
Filed July 12, 1973, Ser. No. 378,536
Int. Cl. D05c *5/00*
U.S. Cl. 112—84 **3 Claims**



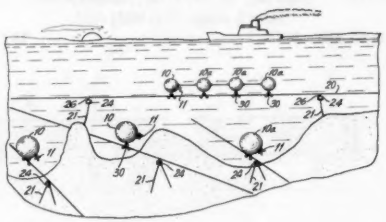
An automatic color-change mechanism for a shuttle embroidering machine has a pair of pusher guides arranged on a needle carriage and converging to a point at the front of the latter and at an acute angle to each other. For the 4/4 repeat, a left hand pusher in one guide and a right hand pusher in the other are linked with a control bar movable transversely to the working direction of the needles. The linkage levers are disposed at an angle to each other such that, as the control bar moves left, the left hand pusher is moved into working position while the right hand pusher is withdrawn and vice versa.

3,823,679
SEWING FOOT FOR SEWING MACHINES
Gunter Meier, Weingarten, Germany, assignor to Pfaff Haushaltmaschinen GmbH, Karlsruhe-Durlach, Germany
Filed Feb. 21, 1973, Ser. No. 334,279
Claims priority, application Germany, Mar. 8, 1972, 2210996
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 **8 Claims**

A sewing machine foot for guiding material in respect to a reciprocating sewing needle includes a substantially upright shank portion, a relatively flat sole support extending outwardly from the lower end of the shank portion which includes a forward end having spaced apart legs defining an opening therebetween for the needle and a sole below the sole support which has a resilient web connection to the sole support. The sole includes spaced forwardly extending feet with a space therebetween leading to a transversely extending slot for the passage of the needle which is located below the open space of the legs of the sole support. The sole support legs provide downturned edges forming stops to limit the amount of pivotal movement of the sole in respect to the sole support.



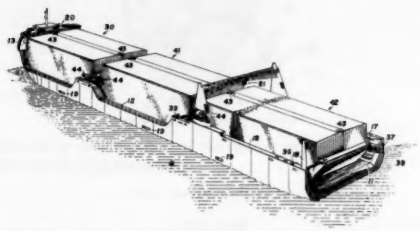
3,823,680
UNDERSEAS TRANSPORT SYSTEM
O. Robert Straumsnes, 1 Bryant Cres., White Plains, N.Y.
Continuation-in-part of Ser. No. 163,955, July 19, 1971, abandoned. This application Mar. 14, 1973, Ser. No. 341,308
U.S. Cl. 114—.5 R **6 Claims**



An underwater transport system comprising buoyant self-propelled vehicles which are secured to an underwater cable track which positively guides the vehicles along their routes and secures the vehicles under the water.

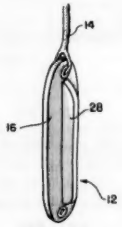
A guidance cable is supported by floatation chambers by means of pillars fixedly secured to the underside of the cable. The floatation chambers are anchored to the sea floor. The vehicles are secured to the cable by means of connectors which are constructed in a manner to allow passage of the connector over the pillar support of the cable. The vehicles are provided with visual and electronic signal means for communication with terminal stations and/or which automatically send out emergency signals should the vehicles break away from the cable and rise to the water surface.

3,823,681
BARGE CARRYING TRANSPORT VESSEL
Charles R. Cushing, New York, N.Y.; Stephen Phelps Henderson, Kentfield, Calif., and Paul Steven Wells, Mount Vernon, Wash., assignors to Inter-Hull, San Francisco, Calif.
Filed Nov. 16, 1972, Ser. No. 307,291
Int. Cl. B63b *35/28*
U.S. Cl. 114—43.5 9 Claims



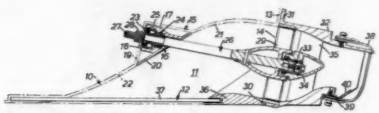
A vessel for transporting a plurality of barges is disclosed. A hull having a well deck adapted to support a plurality of barges has a plurality of ballast tanks adapted to be filled with sea water. When the ballast tanks are flooded, the hull is in a loading configuration, wherein the well deck is submerged so that barges can be floated over the well deck and positioned thereon. The ballast tanks, when empty, place the hull in a transporting configuration, wherein, the well deck is above water to transport the barges thereon. A wing wall is located on the edge of the well deck and is adapted to enclose the starboard side, the port side, and the bow thereof. The wing wall is adapted to be submerged when the hull is in the loading configuration and above water when the hull is in the transporting configuration.

3,823,682
BOAT FENDER AND BRAKE
Stefan Jochimski, 30 E. Oak St., Chicago, Ill. 60611
Filed July 24, 1972, Ser. No. 274,662
Int. Cl. B63b *59/02*
U.S. Cl. 114—219 9 Claims



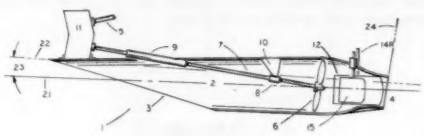
An elastomeric boat fender in which two elastomeric walls are mounted in normal relationship to each other. Two pairs of diagonally opposite dihedral planes are formed and such diagonally opposite planes are respectively opened and closed as the bumper makes dock impact. The inside edges of an opening dihedral plane frictionally contact both the hull and the dock structure to brake boat movements, the dihedral planes being biased to resume right angle or normal configuration.

3,823,683
PROPULSION DEVICES
Andrew Charles Usborne, Sheffield, England, assignor to UA Engineering Limited, Sheffield, England
Filed Oct. 20, 1971, Ser. No. 190,799
Claims priority, application Great Britain, Oct. 20, 1970, 49639/70
Int. Cl. B63h *11/08*
U.S. Cl. 115—16 4 Claims



A water-borne vessel has an intake duct provided by a formed section of the hull. An impeller unit comprising a rotary impeller within a casing fixed to a discharge duct is fastened to the hull at the outlet of the intake duct.

3,823,684
BOAT DRIVE
Joseph E. Baggs, 13632 Lanning St., Garden Grove, Calif. 92643
Filed Mar. 2, 1973, Ser. No. 337,753
Int. Cl. B63h *5/16*
U.S. Cl. 115—39 9 Claims

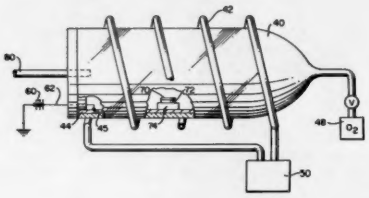


Boat Drive System comprising as an integral unit, a propeller, propeller driving shaft with suitable bearings and seals, a duct having an inlet and outlet end oriented essentially parallel to the longitudinal axis of the boat within which said propeller rotates in a plane essentially normal to the longitudinal axis of the duct, and steering and reversing vanes within the discharge end of such duct. Said boat drive incorporates prior art ducted fan principal to improve efficiency, performance, safety, and reduce cost of boat drive systems available principally for pleasure craft.

3,823,685
PROCESSING APPARATUS
Ronald L. Koepp, Dayton, and Stanley J. Dudkowski, Kettering, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Continuation of Ser. No. 169,545, Aug. 5, 1971, abandoned, which is a division of Ser. No. 886,185, Oct. 14, 1969, Pat. No. 3,645,695. This application Oct. 23, 1973, Ser. No. 408,700
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 4 Claims

The present invention relates to a processing apparatus for growing and annealing a silicon dioxide insulator layer to obtain a mobile positive ion free silicon dioxide insulator layer. A mobile positive ion free silicon dioxide insulator layer is required in order to make a stable insulated gate field effect transistor. The processing apparatus comprises a non-oxidiz-

ing, high-melting-point platinum metal film coated quartz furnace tube, potential means for placing a positive potential upon the platinum metal film coating of the platinum metal film coated quartz furnace tube to repel mobile ions therefrom, heater means for heating the interior of the quartz furnace tube, and gas means for passing oxygen gas through the platinum metal film coated quartz furnace tube. A silicon wafer may be oxidized in said processing apparatus to form a relatively mobile positive ion free silicon dioxide insulator layer of an insulated gate field effect transistor upon the silicon wafer. The silicon dioxide insulator layer is relatively uncontaminated by mobile positive ions which exist to the outside of the platinum metal film coated quartz furnace tube. A silicon wafer which previously has been coated by a silicon dioxide insulator layer may be processed to remove mobile ions within the silicon dioxide insulator layer. Mobile positive ions are repelled by the positive potential applied to the platinum metal film away from the outside of the quartz furnace tube, and mobile positive ions of the silicon dioxide insulator layer within the platinum metal film coated quartz tube are removed by the flowing oxygen gas due to the low vapor pressure of the mobile positive ions.



3,823,686

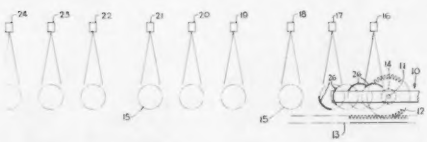
APPARATUS FOR SPRAYING CLYINDRICAL ARTICLES

Herbert C. Snyder, Brockway, Pa., assignor to Brockway Glass Company, Inc., Brockway, Pa.

Filed Mar. 8, 1971, Ser. No. 121,735

Int. Cl. B05c *5/00*

U.S. Cl. 118—314 **3 Claims**



Apparatus for spray coating bottles by moving the bottles linearly and simultaneously rotating them at a rate synchronized with their linear movement. A series of spray guns are spaced alongside the path of the bottles at the side where their peripheries are rotating forwardly. The rotation of the bottles is so related to their linear movement and to the spacing of the spray guns that the points on the bottles which register with the spray guns as the bottles move rotatively along are uniformly spaced about the bottle peripheries.

3,823,687

COATING APPARATUS

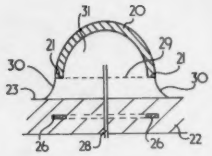
James N. McGlashen, Winstanley, England, assignor to Dunlap Holdings Limited, London, England

Filed Dec. 2, 1971, Ser. No. 204,262

Claims priority, application Great Britain, Dec. 16, 1970, 59827/70

Int. Cl. B05c *3/20*

U.S. Cl. 118—421 **7 Claims**



A method and apparatus for the accurate coating of liquids, particularly adhesives, onto selected areas of the surface of an article. The article is positioned above the surface of the liquid in correspondence with a tool below the liquid surface. The tool corresponds in shape to the selected areas of the article. Raising the tool without breaking the surface of the liquid causes the liquid above it to rise and contact the article in the selected areas only, of which the following is a specification.

3,823,688

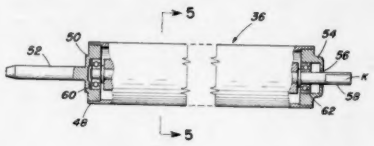
MAGNETIC BRUSH ASSEMBLY

Stanley D. Klett, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 26, 1972, Ser. No. 220,965

Int. Cl. G03g *13/00*

U.S. Cl. 118—637 **6 Claims**



A roller assembly for inclusion in a magnetic brush assembly wherein a floating bias is provided on a shaft of the roller assembly.

3,823,689

DEVELOPING DEVICE FOR ELECTROSTATIC CHARGE IMAGES

Gerardus Dietz, Rijswijk, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 18, 1972, Ser. No. 290,236

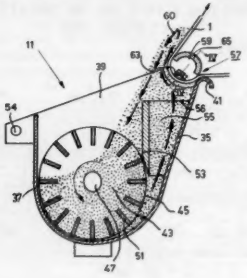
Claims priority, application Netherlands, Sept. 29, 1971, 7113329

Int. Cl. G03g *13/00*

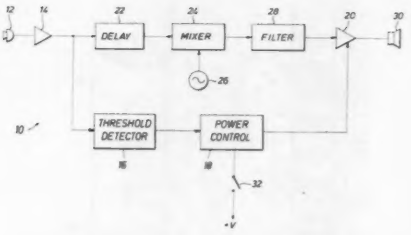
U.S. Cl. 118—637 **5 Claims**

A developing device for a carrier provided with electrostatic charge images, consisting of a trough-like chamber

which accommodates a paddle wheel. A vertical partition limits a gap-like space in which developing powder is forced upwards by slow rotation of the paddle wheel until it comes into contact with the carrier.



frequency tone which is annoying to the dog, and the dog soon learns that the barking is punished by the high frequency sound. The silence of the dog is rewarded by termination of the high frequency sound. A switch override provides continuous output of tone.

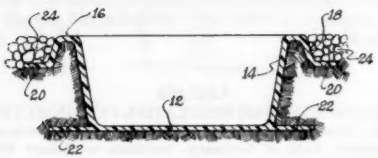


3,823,690

POOL CONSTRUCTION

Robert W. Rynberk, Oak Lawn, Ill., assignor to Imperial Landscape & Supply Co., Inc., Oak Lawn, Ill.

Filed Apr. 6, 1973, Ser. No. 348,514
Int. Cl. A01k *63/00*
U.S. Cl. 119—5 **2 Claims**



A one-piece molded pool construction for use in a garden and the like comprising an interior side wall portion for holding water. An integrally formed outer wall extends downwardly in spaced relationship relative to the interior wall for a short distance. This outer wall terminates in an outwardly extending flange. A second outwardly extending flange is located at the bottom of the construction, and the pool is located in place in an excavation or the like whereby both flanges are positioned beneath the surface with fill material extending over both flanges.

3,823,691

ANIMAL TRAINING DEVICE

Marshall M. Morgan, 10819 Chimney Rock, Houston, Tex. 77035

Filed May 10, 1973, Ser. No. 358,928
Int. Cl. A01k *15/00*
U.S. Cl. 119—29 **9 Claims**

An apparatus useful in breaking dogs from barking, incorporating a microphone, threshold detecting circuit which senses a bark or other noise from the dog of suitable amplitude and duration, an oscillator providing an output frequency sufficiently high that human ears cannot hear it, a mixer circuit where the oscillator frequency is modulated by the bark, and a filter circuit which rejects low frequency components of the mixed signal to avoid annoying humans, and a power output amplifier connected to a speaker. The threshold detector controls the application of power to the output amplifier. When the device operates, the dog's bark modulates the higher

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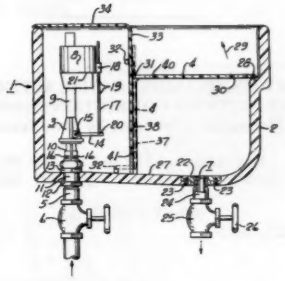
3,823,692

LIVESTOCK WATERING FOUNTAIN

Harold O. Bowser, Box 22, Renfrew, Pa. 16053

Filed Mar. 26, 1973, Ser. No. 344,489
Int. Cl. A01k *7/00*
U.S. Cl. 119—78 **4 Claims**



A livestock watering fountain wherein a watering bowl or basin is provided with an adjustable water level control valve which, in turn, is connected to a controllable water source. A drain is provided in the bottom of the bowl for periodic cleaning. The watering bowl is characterized by a removable horizontal false bottom. The watering fountain is particularly adaptable to use with race horses. The false bottom prevents an overheated horse from swallowing more than a predetermined amount of water. The horse can drink no lower in the bowl than the level of the false bottom when the main water supply is turned off, thereby preventing the horse from foundering.

3,823,693

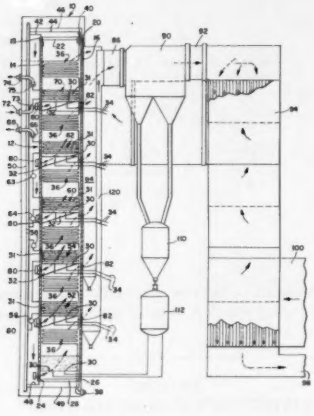
FLUIDIZED BED HEAT EXCHANGER

Richard William Bryers, North Cranford, and Jack David Shenker, Dover, both of N.J., assignors to The United States of America as represented by the United States Environmental Protection Agency, Washington, D.C.

Filed Jan. 16, 1973, Ser. No. 324,041
Int. Cl. F22b *1/02*
U.S. Cl. 122—4 D **9 Claims**

A vapor generator in which a plurality of vertically stacked beds of particulate material containing a solid fuel are

disposed in a housing. Air is passed through each of the fuel beds to promote the combustion of the fuel and maintain the



beds at predetermined temperatures while a heat exchange medium is circulated in a heat exchange relation to the beds.

3,823,694

ROTARY PISTON ENGINE HAVING ALTERNATELY USED EXTERNAL COMBUSTION CHAMBERS

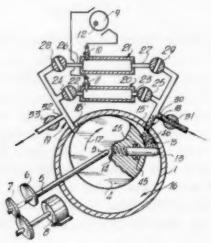
Concezio Mazzagatti, 3786 Santa Fe Ave., Buenos Aires, Argentina

Filed May 31, 1972, Ser. No. 258,292

Claims priority, application Argentina, June 1, 1971, 235905

Int. Cl. F02b *53/00*

U.S. Cl. 123—8.27 **10 Claims**



Rotary engine having a casing, a rotor housed therein and dividing said casing into a volume increasing chamber and a volume decreasing chamber, respectively connected to a fuel mixture inlet conduit and an exhaust gas outlet conduit, a pair of compressed fuel mixture receiving chambers outside said casing for producing the ignition of the compressed fuel mixture therein, and sending the expanding gases into said casing for driving said rotor, which in turn compresses the fuel mixture for sending it into said compressed fuel mixture receiving chambers and discharges the exhaust gases.

3,823,695

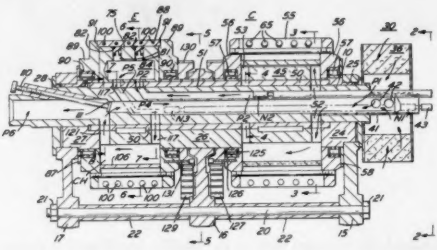
ROTARY ENGINE

William G. Swartz, Box 543, North Hills, Pa. 19038

Filed June 4, 1973, Ser. No. 366,612

Int. Cl. F02b *53/08*

U.S. Cl. 123—8.23 **10 Claims**



A rotary engine is provided which includes a stationary shaft, three spaced stationary supports with eccentric cylinders, thereon interposed between the supports and the shaft, a multilobed compressor rotor carried on a sleeve concentric with the shaft between the first and second support, a compressor casing surrounding the rotor carried by bearings on the eccentric cylinders, a multilobed engine rotor between the second and third supports carried by a sleeve concentric with the shaft, an engine casing surrounding the engine rotor carried by bearings on the eccentric cylinders, and multiple passageways in the rotors and the shaft to provide for communication therebetween for fuel mixture introduction, compression, treatment, compression, combustion and exhaust gas feedback.

3,823,696

ARRANGEMENT FOR REGULATING FUEL INJECTION

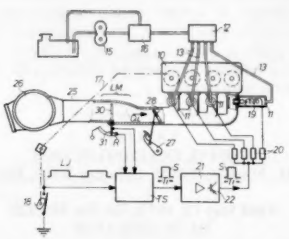
Ulrich Mutschler, Nellingen, and Norbert Rittmannsberger, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 17, 1972, Ser. No. 272,256

Claims priority, application Germany, July 17, 1971, 2135824

Int. Cl. F02m *51/00*

U.S. Cl. 123—32 EA **13 Claims**



A regulating arrangement maintains proper fuel-air mixing ratios in a combustion engine by regulating the fuel-injection time as a function of airflow through the air-intake passage. The arrangement includes an electrically controllable fuel-injection valve, adjustable electric timing means for opening the valve for an adjustably predetermined time, and an adjusting member for adjusting such predetermined time. An airflow sensing member is operatively associated with the adjusting member and is mounted in the air-intake passage for displacement by air flowing through such passage. The sensing

member is displaceable to a plurality of positions each corresponding to a different amount of airflow. A pneumatic damping unit is operative in response to airflow changes and applies to the sensing member a damping force which decreases with time. In this manner, the damping means opposes displacement of the sensing member in response to sudden and short-lasting changes in airflow conditions.

3,823,697

MULTICYLINDER MOTOR OR ENGINE WITH DOUBLE-ACTING PISTONS

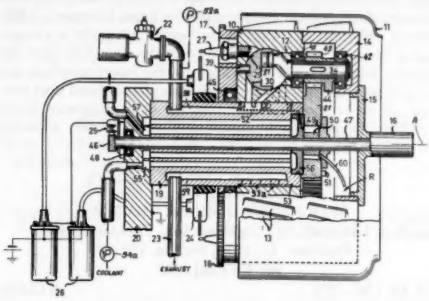
Paul Von Esch, Zurich, Switzerland, assignor to Bekama AG, Zug, Switzerland

Filed Apr. 17, 1972, Ser. No. 244,499

Claims priority, application Switzerland, Nov. 18, 1971, 16921/71

Int. Cl. F02b *57/00*

U.S. Cl. 123—43 R **12 Claims**



An internal-combustion engine or fluid (pneumatic or hydraulic) motor has a fixed central shaft formed with a sun gear, and a housing rotatable around the shaft. This housing is formed with a plurality of bores each subdivided into two compression chambers by a double-acting piston which is displaceable along an axis parallel or transverse to the shaft axis. Each piston is connected by a crank to a pinion which acts as a planet gear meshing with the sun gear so that reciprocation of the piston causes the planet gear to rotate, thereby entraining the housing about the fixed shaft. Alternatively the device may be driven mechanically to operate it as a pump.

3,823,698

MECHANICAL LASH ADJUSTER

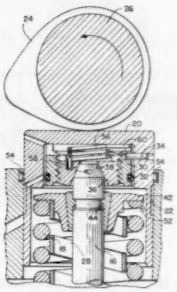
Walter H. Van Deberg, Berkley, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Filed Jan. 18, 1972, Ser. No. 218,806

Int. Cl. F01l *1/20*

U.S. Cl. 123—90.54 **17 Claims**

In an internal combustion engine having a lash adjuster, the usual shortening of the valve train occurs during the opening stroke of the valve (to introduce excessive lash or clearance), then the train is lengthened at the end of the closing stroke to remove all lash. In this invention, the motion for shortening the train is derived from the inherent unwinding of the helical valve spring when compressed to open the valve. This unwinding turns a screw within a nut of a threaded connection in the tappet or valve lifter thereby shortening the train and introducing lash. The screw can turn in the nut because the nut is prevented from following the rotating spring either by counter rotational urge of an offset cam on the lifter or by a one-way clutch holding the lifter. The turning of the valve spring also winds up a restoring spring between the screw and the nut. When the valve closes, the force of the valve spring is



removed from the lifter. The lifter (and nut) are then allowed to rotate in the opposite sense and the connection is threaded out by the restoring spring to remove all lash.

3,823,699

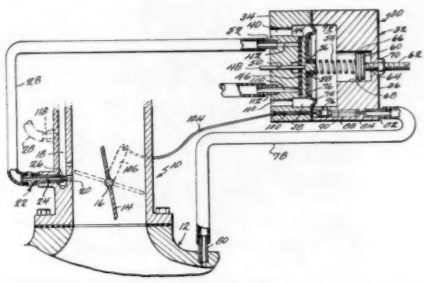
DECELERATION FUEL FLOW AND EMISSION CONTROL FOR INTERNAL COMBUSTION ENGINES

Paul F. Adair, Miami, Fla., assignor to Aerodex, Incorporated, Miami, Fla.

Filed Oct. 20, 1972, Ser. No. 299,460

Int. Cl. F02m *23/04*

U.S. Cl. 123—119 DB **4 Claims**



A control for the idling carbureted mixture of fuel and air of a vehicle-propelling internal combustion engine to reduce the fuel to air ratio when the vehicle is decelerating and is coupled to the engine. Engine intake manifold pressure and throttle valve setting govern the control which preferably leans the mixture sufficiently so it is not combustible in the engine.

3,823,700

COMBINED CARBURETOR THROTTLE AND CHOKE CONTROL FOR SMALL GASOLINE ENGINES

Herbert A. Gumtow, Brookfield, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

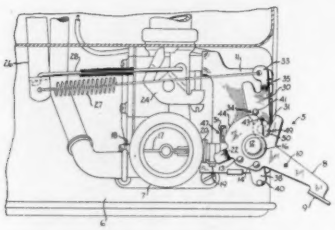
Filed May 7, 1973, Ser. No. 357,879

Int. Cl. F02d *37/00, 9/00*

U.S. Cl. 123—119 F **3 Claims**

A manually movable engine control lever swings between defined "stop" and "choke" positions, through a range of "run" positions, its maximum speed setting being nearest the "choke" position. A second lever is connected with the engine governor spring to tension it for desired engine speed. A cam edge of the first lever cooperates with a cam follower on the

second, providing a connection whereby the second lever swings with the first as the first is moved between "stop" and



maximum speed positions but the first swings between maximum speed and "choke" positions independently of the second while the second remains in maximum speed position.

3,823,701

PNEUMATIC PULSE COUNTING DEVICE

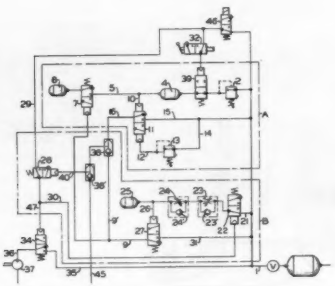
Hirokazu Tuji, Kobe, Japan, assignor to The Nippon Air Brake Co. Ltd., Kobe, Japan

Filed Nov. 30, 1972, Ser. No. 310,776

Claims priority, application Japan, Dec. 18, 1971, 46-102930

Int. Cl. F02n *7/00, 9/00*

U.S. Cl. 123—179 R **20 Claims**



This invention is concerned with a fluid pressure type pulse counting device. To start an internal combustion marine engine, a starting device is actuated by a repeated supply of compressed air, but this repeated actuation process cannot be carried out unlimitedly. When the engine fails to start after a certain number of actuation processes, the actuation process is discontinued temporarily and the engine is examined. Therefore, it will be of extreme convenience, if a pulse counting device can be installed in the starting device mentioned above to count the number of actuation processes performed.

3,823,702

INTERNAL COMBUSTION ENGINE MANIFOLD AND FLUID FLOW CONFIGURATION

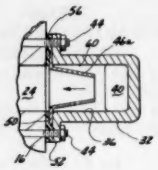
Charles G. Roberts, 1015 Michigan Ave., Howell, Mich. 48843

Filed Jan. 11, 1971, Ser. No. 105,474

Int. Cl. F01l *3/02*

U.S. Cl. 123—188 M **36 Claims**

The manifold and cylinder head structures of an internal combustion engine are provided with fluid flow passageways extending from the manifold plenum to the valve ports of the engine cylinders, with fluid flow control members disposed in the passageways and defining peripheral restrictions therein. In some modifications the members are integrally formed in a gasket sandwiched between the manifold and the cylinder head and having openings registered with the passageways, which openings have a cross sectional area less than the passageway cross sectional areas. In some modifications the insert members are elongated and increase in cross sectional area from the upstream to the downstream ends. In some



modifications, each insert member has an integral flange at either end or intermediate the ends, the flange being retained between the manifold and the cylinder head. In some modifications a plurality of members are formed integrally in a single gasket element sandwiched between the manifold and the cylinder head. In some modifications, the insert members are integral with the manifold or with the cylinder head port runners. In some modifications, the intake passageway insert members are press fit or otherwise secured closely adjacent the intake ports.

3,823,703

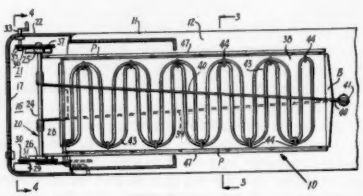
SELF-STORING SOLAR HEATER

Joseph A. Lanciault, 902 Highland Ave., Fitchburg, Mass.

Filed Oct. 21, 1971, Ser. No. 191,375

Int. Cl. F24j *3/02*

U.S. Cl. 126—271 **6 Claims**



A self-storing solar heater is disclosed installed on a house trailer with the heater being extendable over a portion of the roof of the trailer to receive the rays of the sun during the day and is stored in a heated compartment on cold days and nights to prevent the water in the solar heater from freezing. A theremostatically controlled motor driven reel retracts the solar heater into the heated storage compartment and a pulley system actuated by the same motor extends the solar heater when heating rays are available from the sun.

3,823,704

POWER BURNER APPLICATION TO FIN TUBE HEAT EXCHANGER

Paul G. Daugirda, Chicago, and Leslie D. Smith, Hickory Hills, both of Ill., assignors to Rheem International, Inc., New York, N.Y.

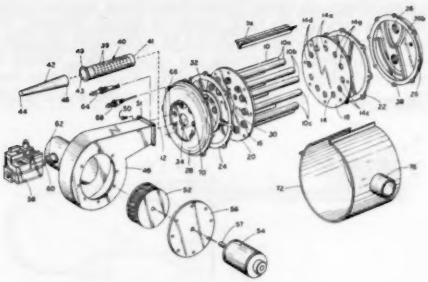
Filed Feb. 14, 1973, Ser. No. 332,368

Int. Cl. F24h *1/34*

U.S. Cl. 126—392 **4 Claims**

A power burner, fin tube heat exchanger includes a plurality of parallel fin tubes connected at each end with a manifold to

define a combustion chamber or enclosure. A gas and air mixture is provided to the enclosure by a blower and ignited. A

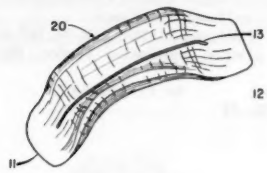


flue gas collector enshrouds the fin tube enclosure and provides an exhaust path for the combusted flue products.

3,823,705
BLOOD VESSEL BRIDGING DEVICE

Cleve Trimble, Denver, Colo., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 26, 1972, Ser. No. 318,130
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R **8 Claims**



A blood vessel bridging device to be surgically implanted between two blood vessels to prevent partial occlusion of one by the other. The device comprises a generally U-shaped molded body of, e.g., Dacron reinforced silicone rubber having flattened bearing portions at both ends thereof and a generally Utshaped cross-section at its mid portion to cradle the overlying blood vessel.

3,823,706
BLOOD FLOW DIAGNOSTIC METHOD

Merlin Davis, 105 Columbia Ave., Pitman, N.J. 08071

Division of Ser. No. 867,561, Oct. 20, 1969, Pat. No. 3,689,393. This application Aug. 10, 1972, Ser. No. 279,738
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 F **1 Claim**

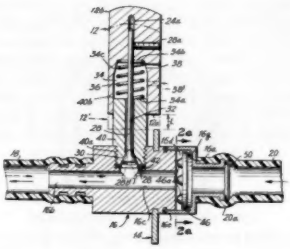
A diagnostic method intended primarily for the evaluation of velocity-related abnormalities in blood. These conditions are determined by sensing the inherent tendency of blood red cells to modulate the amplitude of an electric current at a distance from the electrodes. Resulting variations in electrical impedance follow an invariable cube-root function of corpuscle velocity. Electrode configuration and placement are essential factors. The electrodes employed are specially adapted for the measurement of velocity in very small vesssels or hollow tubes. Remote sensing, without penetration of the vessel,

is effected by means of ionic-coupling to the electrolytic mixture through membraneous materials impervious to blood.

3,823,707
RETAINING MEANS FOR SPHYGMOMANOMETER VALVE CONTROL HEAD

Roger Hayes, 260 Garth Rd., Scarsdale, N.Y. 10583

Filed Sept. 14, 1972, Ser. No. 289,149
Int. Cl. A61b *5/02*; **F16k** *51/00*
U.S. Cl. 128—2.05 G **5 Claims**



An improved control mechanism for a self-closing sphygmomanometer valve is disclosed. The valve head is movable from an upper closed position to a lower open position against the action of an internal spring. The internal chamber of the valve head is narrowed at its upper portion to achieve a wedging fit over the enclosed valve guide, to thereby selectively retain the head in a depressed position from which it can be released by the application of a lateral force by the operator.

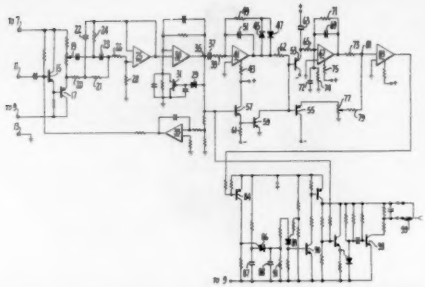
3,823,708
TACHYCARDIA DETECTOR

Richard D. Lawhorn, Dublin, Calif., assignor to Cardiodynamics, Inc., Dublin, Calif.

Filed June 8, 1972, Ser. No. 260,775
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **10 Claims**

A selective circuit is provided for passing only selected waveforms of a desired polarity from a complex input waveform. The circuit is particularly adapted for use in a heart ventricular arrhythmia detector. In such a detector, it is first necessary to differentiate the abnormal negative ventricular ectopic beats from the normal negative Q & S waves. After these abnormal beats are detected, they are accumulated and,

if a number of them occur within a limited period of time, an alarm circuit is actuated. One embodiment also includes

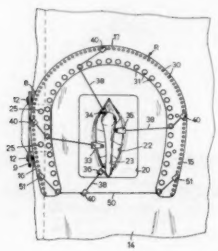


means for detecting bradycardia and tachycardia. A further embodiment provides means for transmitting an ECG over the telephone.

3,823,709
TABLE SUPPORTED SURGICAL RETRACTOR AND PELVIC SUPPORT

George McGuire, Rt. 3 Orange Ln., Depere, Wis. 54115

Filed Apr. 27, 1973, Ser. No. 355,034
Int. Cl. A61b *17/02;* **A61g** *13/00*
U.S. Cl. 128—20 **16 Claims**



An operating table supported surgical retractor assembly for individual retracting blades which hold the various parts of the body away from the surgical area. The assembly includes a generally C-shaped retractor which is particularly designed for hip or shoulder area operations.

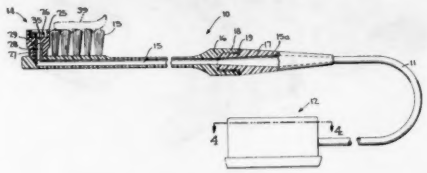
A body support for the pelvic region firmly supports the patient on his side during the operation to enable the surgeon to work on the patient and know precisely the location of the patient's bones in the surgical area. The body support also provides a mounting for the retractor when the patient is operated on while lying on his side.

3,823,710
PULSED AIR TOOTHBRUSH AND METHOD

John V. Borden, 1835 Eye St., Washington, D.C. 20006

Filed Nov. 7, 1972, Ser. No. 304,568
Int. Cl. A61h *1/00*
U.S. Cl. 128—40 **28 Claims**

A system for cleansing teeth and gums is disclosed wherein a gas is pressurized to produce a series of pulses, and the gas pulses are injected into the mouth through an implement. The outlet orifice of the implement is positioned in juxtaposition to the teeth and gums to provide intimate but gentle contact and scrubbing action of the escaping bubbles that is particularly effective to remove plaque. Additional and higher intensity pulses may be provided by periodically sealing the outlet orifice to permit buildup of pressure and then releasing the seal to more effectively loosen foreign material and provide bubble scrubbing between the teeth, similar to known "flossing" action. Plaque is further combated by concurrent massaging with the resilient tip forming the outlet orifice, similar to known "wiggling" action, particularly around the gum line. The bubbling of the gas, preferably air, is effective to gently

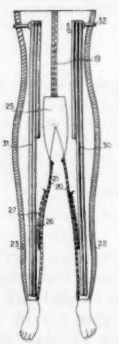


circulate the liquid solution of oral cleanser and saliva in the mouth of the user around and against the teeth and gums and thereby assuring movement of the bacteria away for disposal. The tip element has dual concentric flexible rims that provide a double seal against large surfaces; the inner smaller seal being solely effective against the smaller teeth. The pulsing air is generated by tandem diaphragm pumps, driven by electromagnetic motors that may be operated in or out of phase. Rebound of the oscillatable drive lever is enhanced by a resilient pad on the top of the diaphragm thus increasing the amplitude of the stroke.

3,823,711
INFLATABLE PROFILE WITH HIGH PNEUMATIC RIGIDITY

Gildas Hatton, Paris, France, assignor to Aerazur Constructions Aeronautiques Anciens Etablissements Clande Ethatten, Issy-Les-Moulineaux, France

Filed June 28, 1972, Ser. No. 267,162
Claims priority, application France, Dec. 14, 1971, 71.44817
Int. Cl. A61f *5/02*
U.S. Cl. 128—78 **9 Claims**



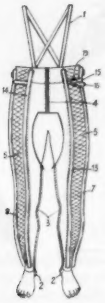
An inflatable shaped structure comprising an assembly of pneumatic tubular elements, characterized by the combination of a number of inflatable tubes made from elastic material and a fabric casing forming adjacent elongated cells which contain the tubes, each pair of adjacent cells having plane sides joined by stitching along at least one generator to the vicinity of a continuous wall which closes the cells.

Its application to orthopaedic clothing.

3,823,712
PNEUMATIC APPARATUS FOR HOLDING THE POSTURE OF PARALYZED, DISEASED, DISABLED OR WOUNDED PERSONS

Georges Morel, Berck, France, assignor to Aerazur Constructions Aeronautiques, Issy-Les-Moulineaux, France

Continuation of Ser. No. 172,617, Aug. 18, 1971. This application July 3, 1973, Ser. No. 376,216
Int. Cl. A61f 5/04
U.S. Cl. 128—87 R 12 Claims

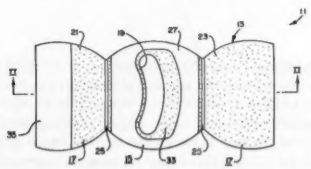


The apparatus according to this invention comprises essentially a pair of trousers, or an overall of special, lightweight and high-resistance material, retained on the wearer's body by suitable means such as suspenders, belts, trouser-straps, et cetera, provided with zip fasteners and adjustable through suitable means such as lacings, these trousers having incorporated therein a plurality of separate flexible inflatable tubes adapted, when inflated, to impart to the various portions involved the desired rigidity permitting of holding the proper posture or position.

3,823,713
AURAL DRESSING

Navnit Shankerlal Shah, London, England, assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed Nov. 10, 1972, Ser. No. 305,439
Int. Cl. A61f 13/00
U.S. Cl. 128—157 3 Claims

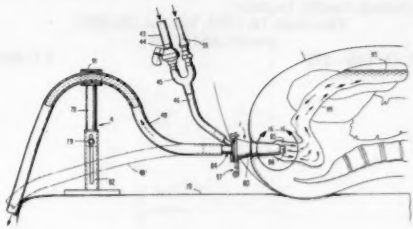


An aural dressing having a flexible body formed of open cell material. The body includes a base portion for attaching to a patient's head surrounding his ear and includes flap portions for folding over the base portion and covering the patient's ear. The base portion is provided with a slot for allowing the patient's ear to pass therethrough.

3,823,714
METHOD AND APPARATUS FOR LAVAGING THE LOWER INTESTINAL TRACT

John J. Waysilk, and Enid A. Waysilk, both of 155 E. Alyio Rd., Palm Springs, Calif. 92262

Filed Oct. 2, 1973, Ser. No. 402,850
Int. Cl. A61m 3/00
U.S. Cl. 128—229 8 Claims

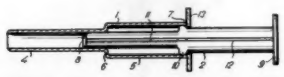


A method and apparatus are disclosed which provides for lavaging the lower intestinal tract of a patient by the use of an instrument that is adapted to be inserted into the anal canal of a patient. The instrument is provided with an inlet passageway and an outlet passageway. Auxiliary apparatus is provided for controlling the supply of water flowing by way of inlet tubing into the inlet passageway of the instrument so that the water is introduced into the lower intestine with a negligible amount of force in order to insure the safety and comfort of the patient. A regulator valve is fluidly connected between the inlet tubing and a source of pressurized water such as a faucet having a water control valve for adjusting the water temperature. The regulator valve includes a bellows-type shut-off element which responds to sensing water temperature above a predetermined level to block flow through the valve outlet. A valved drain port in the regulator valve enables water from the supply source to by-pass the valve outlet until water temperature has been adjusted to a desired level. The regulator valve includes a thermometer which provides an indication of water temperature.

3,823,715
SUPPOSITORY INTRODUCER

Stanislay Holanek, and Karel Stolpa, both of Brno, Czechoslavakia, assignors to Chirana Zovody Zdravotnicky technicky Odbarovy Podnik, Stara Tnra, Czechoslovakia

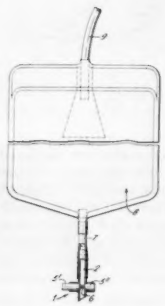
Filed Dec. 8, 1971, Ser. No. 205,829
Claims priority, application Czechoslovakia, Dec. 10, 1970, 8311/70
Int. Cl. A61m 31/00
U.S. Cl. 128—264 7 Claims



An introducer for suppositories and flowable, extrudable material. The introducer, which is preferably made of plastic material, has a tubular body with a forward necked-down inserting section and a rear, pressure-generating section in the form of a cylinder within which there reciprocates a pressure-generating piston. The forward end of the piston is extended into a forward portion having a smaller effective diameter, such forward section fitting within the necked-down inserting section of the body. The suppository or other medicament is placed in the cavity of the inserting section of the tubular body, and after introduction of the inserting section, such

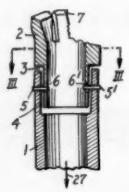
material is forced outwardly by the piston. The introducer of the invention facilitates manipulation with suppository preparations, and greatly improves the hygienic conditions during the introduction of the material.

3,823,716
URINARY DRAINAGE DEVICES
Max Hale, Cardiff, England, assignor to Simpla Plastics Limited, Cardiff, England
Filed Aug. 14, 1972, Ser. No. 280,095
Int. Cl. A61f *5/44*
U.S. Cl. 128—275 **6 Claims**



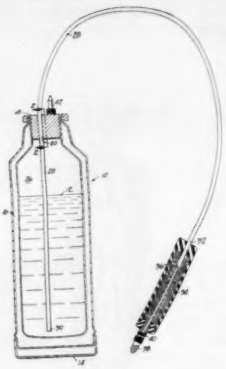
A urinary drainage bag having an inlet tube and a large bore bottom drain outlet tube with a slide valve in the outlet tube controlling the flow out of the bag.

3,823,717
APPARATUS FOR DISINTEGRATING CONCRETIONS IN BODY CAVITIES OF LIVING ORGANISMS BY MEANS OF AN ULTRASONIC PROBE
Reimar Pohlman, and Manfred Cichos, both of Aachen, Germany, assignors to Reimar Pohlman, Aachen, Germany
Filed Apr. 16, 1973, Ser. No. 351,140
Claims priority, application Germany, Apr. 22, 1972, 2219790
Int. Cl. A61b *17/32*
U.S. Cl. 128—305 **12 Claims**



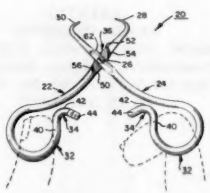
An ultrasonic probe for disintegrating concretions e.g. urinary calculus, in body cavities comprises a probe tube, ultrasonically vibrated in a longitudinal direction, having at one end a tubular impact element loosely coupled to it in the direction of vibration. The impact element is provided on its free end with a cutting edge, preferably formed by a plurality of teeth. The disintegrated concretions are continuously evacuated through the tubular impact element and the tubular probe.

3,823,718
PORTABLE CRYOSURGICAL APPARATUS
Theodore A. Tromovitch, 1667 Escalante Way, Burlingame, Calif. 94010
Filed Sept. 15, 1972, Ser. No. 289,753
Int. Cl. A61b *17/36*; **B67d** *5/40*
U.S. Cl. 128—303.1 **2 Claims**



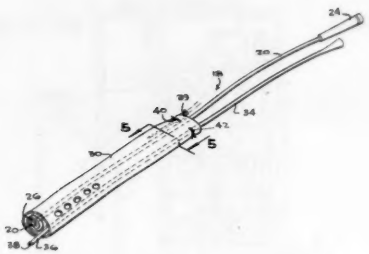
This invention relates to cryosurgery, and more particularly to the delivery and application of liquified gas coolant to living tissue in order to necrotize the same.

3,823,719
FINGER OPERATED FORCEPS TYPE SURGICAL INSTRUMENT
Clinton M. Cummings, Southbury, Conn., assignor to Acme United Corporation, Bridgeport, Conn.
Filed Nov. 14, 1972, Ser. No. 306,321
Int. Cl. A61b *17/12, 17/28*
U.S. Cl. 128—322 **16 Claims**



An inexpensive and efficient clamp type surgical instrument which is comfortable to use and eliminates excessive pressure at the jaws of the instrument is produced by incorporating heel and shoulder stops and open finger gripping loops having a return curve portion between the normal finger gripping position and the pivot axis of the instrument's arms. The return curve portion in the finger gripping loops of the instrument prevents the operator's fingers from sliding into the open portion of rhe fingerloops, thereby eliminating pinching the operator's fingers. The heel and shoulder stops assure that the jaws of the surgical instrument cannot have more force applied thereto than the instrument is designed to handle. As a result, these features of the surgical instrument of this invention cooperate to provide an inexpensive instrument having the rigidity and feel of more expensive surgical instruments.

3,823,720
SURGICAL DRAIN
David E. Tribble, 1400 Barnwell St., Columbia, S.C. 29201
Filed June 21, 1972, Ser. No. 264,757
Int. Cl. A61b 27/00
U.S. Cl. 128—350 R 10 Claims

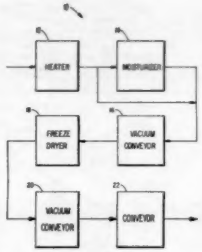


A surgical drain is disclosed in the form of a drainage catheter about the inner or distal end of which a nylon net is wrapped and retained in position loosely by a plurality of ties with the net and catheter being encased in a thin rubber sheath in a loose manner so that air can flow into the sheath when the outer or proximal end of the catheter is connected to suction; an additional feature resides in an irrigation catheter extending through and along the length of the sheath for providing an irrigation discharge outwardly of the distal end of the sheath for discharging internally of the sheath for internally flushing the sheath for discharge via the suction catheter.

3,823,721
WOMEN'S GARMENTS
Henry M. Herbener, 803 N. Dawson, Thomasville, Ga. 31792
Filed Aug. 13, 1973, Ser. No. 387,792The portion of the term of this patent subsequent to Jan. 23, 1990, has been disclaimed.
Int. Cl. A41c 1/00
U.S. Cl. 128—524 3 Claims

A body garment for women covers at least the hip region of the wearer and is formed of multidirection stretch material. The garment has leg openings and a crotch portion which is provided with a front-to-back elongated opening or slit which has the capability of expanding automatically to a relatively large open configuration when the wearer assumes a sitting position and which closes substantially and automatically when the wearer is standing or walking. The garment finds particular utility as a woman's convenience garment and as apparel for children.

3,823,722
METHOD FOR EXPANDING TOBACCO
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Continuation of Ser. No. 78,809, Oct. 7, 1970, abandoned.
This application Jan. 5, 1973, Ser. No. 321,226
Int. Cl. A24b 3/18
U.S. Cl. 131—140 P 5 Claims



Methods of expanding tobacco in which the tobacco is heated and moistened to increase the elasticity of the cell walls and then subjected to a vacuum rapidly imposed to convert moisture in the tobacco cells to vapor and effect an expansion in the volume of the moisture and a consequent distention of the cell walls to increase the size of cells. The tobacco is then frozen and dried in vacuo to remove at least part of the remaining water without significant alteration in the expanded structure of the tobacco. Heating to a temperature of at least −20° F. is then undertaken to sublime the remaining moisture.

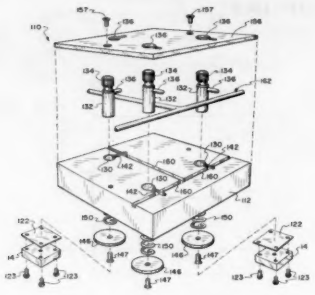
3,823,723
FALSE EYEBROWS
Marie O. Miller, 4615 A Pky., Sacramento, Calif. 95823
Filed Mar. 14, 1973, Ser. No. 341,087
Int. Cl. A41g 3/00
U.S. Cl. 132—5 2 Claims

False eyebrows formed of human or animal hair attached to a flexible material and having an adhesive backing which will adhere to the skin or to the hair of natural eyebrows. The eyebrows are preshaped into a number of curved forms.

3,823,724
CONTROLLING FLOW OF MEDICAL FLUIDS
William P. Davis, Salt Lake City, Utah, assignor to Med-Lab Computer Services, Inc., Salt Lake City, Utah
Filed May 25, 1973, Ser. No. 364,184
Int. Cl. F16k 31/145
U.S. Cl. 137—15 13 Claims

Medical pinch valve assemblies, networks, manifolds and related methods, the assemblies comprising two or more pinch

valves each of which comprises an actuator, a spring-loaded plunger and a valving arm which collapses an array of channel-contained medical tubing with memory at a selected site to occlude flow of medical fluid across the site. When open, the memory of the tubing and the pressure of the medical fluid



opens the previously occluded site to permit flow. Hence, flow of medical fluid from source to destination sites is facilitated. Only the tubing is sterilized and tubing removal and replacement is rapidly achieved so that "down time" is virtually nonexistent.

3,823,725

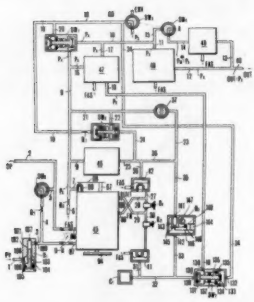
PNEUMATIC CONTROL APPARATUS

Tadashi Akiyama; Ryuhei Fukuda; Masanobu Ando; Norikazu Wada, all of Yokohama; Toshio Umeda, Tokyo, and Tatsuhide Shiga, Zushi, all of Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 30, 1972, Ser. No. 268,002

Int. Cl. G05d *16/00*; **F15b** *5/00*

U.S. Cl. 137—86 **2 Claims**



A pneumatic, proportional, integrating and differentiating control apparatus wherein a rate unit is interposed between the output of an automatic control unit and a negative feedback circuit and wherein an automatic-manual transfer switch is employed to bypass and cut out the effect of the rate unit at the time of manual operation and to reactivate the rate unit at the time of automatic operation. This control apparatus is constructed so that the transfer switch will operate with a longer time delay than its other automatic-manual transfer switches, which operate substantially instantaneously, when switching from manual to automatic operation and thereby provides bumpless and balanceless manual-automatic switching.

3,823,726

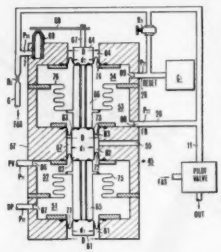
PNEUMATIC CONTROL UNIT

Tadashi Akiyama; Ryuhei Fikuda; Masanobu Ando; Norikazu Wada, all of Yokohama-City; Toshio Umeda, Tokyo, and Tatsuhide Shiga, Zushi-city, all of Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed June 30, 1972, Ser. No. 268,005

Int. Cl. G05d *16/00*; **F15b** *5/00*

U.S. Cl. 137—86 **1 Claim**



A precision pneumatic proportional derivative or proportional integral derivative controller having a plurality of pistons each one of which forms a different portion of a balancing beam. Each piston is arranged to pass through a different one of several spaced apart cylindrical passageways formed by inner wall portions of the casing of said controller. A separate rolling diaphragm is connected in fluid tight sealing engagement with each piston and with its associated wall portion to form a rolling seal therebetween. The diameters of these pistons are of predetermined sizes in relation to their associated passageway diameters. As a result, a predetermined difference or offset is allowed to exist between positive and negative feedback forces applied to the balancing beam, thereby allowing the output offset of the controller to deviate from a zero value while it is maintaining its loop gain at a proper value.

3,823,727

FOAMING SYSTEM AND IMPROVED FOAMING DEVICE

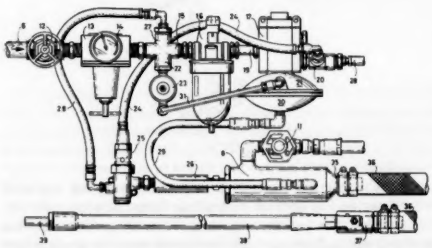
Arthur Francis Fry, Mount Waverley, Australia, assignor to Applied Chemicals Pty. Ltd., Hawthorn, Australia

Filed June 26, 1972, Ser. No. 266,041

Claims priority, application Australia, June 24, 1971, 5302/71

Int. Cl. B08b *3/00*; **F16k** *19/00*

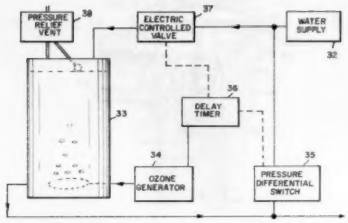
U.S. Cl. 137—88 **9 Claims**



A foam cleaning system and a foam cleaner which is provided with a control actuated by build-up of static pressure in a foaming chamber to cut off air pressure to the chamber thus ensuring that during periods when foam is not being produced

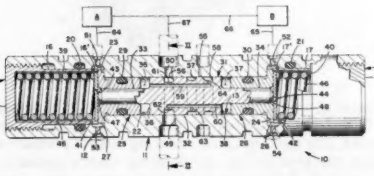
the pressure on the foamer hose is minimized. The foamer also has a facility whereby any tendency of leakage of liquid back into the air system is prevented and automatic purging takes place on the pressure drop in the foam chamber.

3,823,728
CONTROL SYSTEM FOR LIQUID TREATMENT
W. Alan Burris, 7 E. Jefferson Cir., Pittsford, N.Y. 14534
Filed Dec. 29, 1972, Ser. No. 319,783
Int. Cl. C02b *1/38*
U.S. Cl. 137—88 **62 Claims**



A system for adding material to a liquid on variable demand is controlled by a switch responsive to liquid pressure for operating the material-adding means whenever a pressure drop shows that the liquid is withdrawn. A delay means operates the material adding means for a pre-determined interval after the switch changes state in response to stoppage of the withdrawal of the liquid. Also, a valve preferably prevents liquid entry into the system except during liquid withdrawal. The material-adding means is then activated on each liquid withdrawal and for a fixed interval thereafter, and no liquid enters the system without having added material. The system can also be operated without a delay means when the input is controlled so no input can occur except when the system is operating.

3,823,729
DIFFERENTIAL PRESSURE MONITORING VALVE
Emery C. Swogger, Arlington, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.
Filed May 7, 1973, Ser. No. 357,984
Int. Cl. G05d *11/00*; **F16k** *11/07*
U.S. Cl. 137—100 **18 Claims**

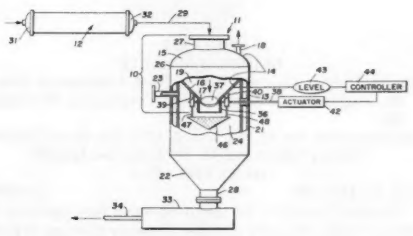


A fluid control valve of a type operable to shut off fluid flow through the valve upon the occurrence of a pressure differential above a predetermined level between two portions of a fluid system. A valve member is slidably mounted within a valve chamber and movable therein within first, second, third, fourth, and fifth positional ranges. The valve member has a passageway which provides communication through the valve between first and second ports for providing fluid flow therebetween upon the valve member being positioned within its third positional range, and also has valving means for shutting off fluid flow upon the valve member being positioned within its first or its fifth positional ranges.

3,823,730
ALIGNMENT CONTROL SYSTEM
John W. Sandstrom, Dallas, and Kenneth C. Cloud, Garland, both of Tex., assignors to Integral Systems, Inc., Dallas, Tex.
Filed Mar. 30, 1973, Ser. No. 346,425
Int. Cl. A01g *25/02*; **B05b** *15/06, 9/02*
U.S. Cl. 137—344 **40 Claims**

Disclosed is an electronic control system for maintaining linear alignment of adjacent fluid conduit sections being reversibly driven, particularly in a pivotal irrigation system, and for interrupting power to the drive means when the sections are in excessive misalignment. A photodetector or potentiometer sensor assembly coupled to the sections serve as pivotal detectors, and a phase detection network serves as a directional detector, the outputs of which are coupled to a logic comparator for selectively energizing drive means coupled to intermediate sections for bringing adjacent sections into alignment.

3,823,731
TANK WITH INTEGRAL REMOTELY CONTROLLED POWER ACTUATED BOTTOM VALVE
Robert E. Gordon, Monson, Mass., assignor to Monsanto Company, St. Louis, Mo.
Filed Jan. 8, 1973, Ser. No. 321,612
Int. Cl. F16k *31/02*
U.S. Cl. 137—395 **3 Claims**



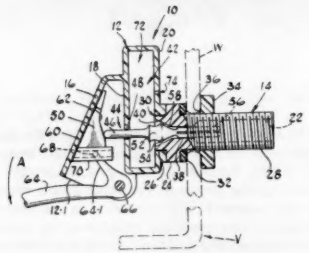
A tank and integral valve assembly suitable for storing and controlling the transfer of viscous fluids. The assembly utilizes a vessel in which is constructed a butterfly-type valve assembly located so as to regulate rate of egress of viscous fluid from the bottom of the vessel. An actuator assembly as-

sociated with a lateral side portion of the vessel controls rotary movements of a valve disc. The actuator is responsive to a level sensor coupled thereto through a controller assembly.

3,823,732
VALVE

Ian Eric Elsby, Linketty House, Pine Rd., Tokai, Cape Town, South Africa

Filed June 30, 1972, Ser. No. 268,199
Claims priority, application South Africa, July 2, 1971, 4369
Int. Cl. F16k *31/24*
U.S. Cl. 137—436 **13 Claims**



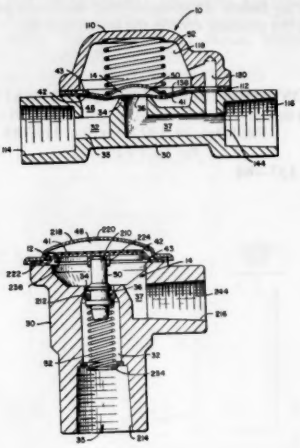
A liquid flow control valve is disclosed which comprises a silencing chamber into which an inlet member opens. The mouth of the inlet member is flared and constitutes a valve seat. A closure member co-operates with the seat to control liquid flow through the inlet member into the chamber. The closure member is moved to the closed position by a cam, and the cam is moved by a float. When the float drops the pressure in the inlet member urges the closure member away from the seat to open the valve. The silencing chamber is open at the top and this open top constitutes the outlet from the chamber. The chamber forms one upright limb of an inverted U-bend. In use the silencing chamber is always full. Means for creating turbulent flow into the chamber are provided on the valve closure member.

3,823,733
DIAPHRAGM VALVE

Chester DuBois, Zion, and Paul R. Hunt, Lindenhurst, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 85,954, Nov. 2, 1970, Pat. No. 3,746,036.
This application Jan. 18, 1973, Ser. No. 324,849
Int. Cl. F16k *15/14*
U.S. Cl. 137—496 **12 Claims**

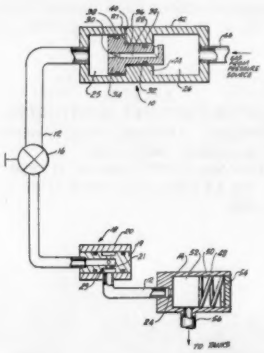
Disclosed herein is an improved valve for regulating the flow of fluids. The valve includes a housing defining, in part, a flow passageway having a port surrounded by a valve seat. A diaphragm is mounted within the housing and assists in completing the flow passageway. The diaphragm is movable between a first position to cause closing of the port and a second position to cause opening of the port. A spring having an end with a diameter larger than the port is operatively engaged with the diaphragm urging the diaphragm to close the port. A suction force operates on the same side of the diaphragm as the spring creating a pressure differential on opposite sides of the diaphragm. The pressure differential is effective to overcome the action of the spring, thereby displacing the diaphragm to an open position and allowing flow of fluid through the port.



3,823,734
AREA RATIO EXCESS FLOW SHUTOFF VALVE SYSTEM

Robert W. McJones, 529-Via Del Monte, Palos Verdes Estates, Calif. 90274

Filed May 21, 1973, Ser. No. 362,213
Int. Cl. F16k *31/36*
U.S. Cl. 137—498 **11 Claims**



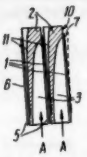
A spool of a normally open valve has an orificed passage for gas flow from a source chamber to a control pressure chamber. The spool has an area facing control pressure which exceeds the area of the spool facing source pressure. The spool is kept in its open position during normal operation because the product of control chamber pressure and spool area seeing the control chamber and normal to the axis of the spool is maintained equal to or greater than the product of source pressure and spool area seeing source pressure and normal to the axis of the spool. Downstream from the control pressure chamber, a second orifice maintains the pressure in the control pressure chamber during normal operation at a value great enough to keep the spool control area control chamber pressure product high enough to keep the valve

open. When there is a leak, however, between the valve and the second orifice, the second orifice cannot maintain a sufficiently high control pressure and the product of source pressure and spool source area will exceed the offsetting product and the spool will move to a closed position preventing gas flow through the valve. The orifice in the spool assures that there will be sufficient pressure drop between the two chambers to cause the spool to close.

3,823,735
UNIFLOW VALVE

Mark Isaakovich Frenkel, ulitsa 6, korpus 2, kv. 20, Leningrad, U.S.S.R.

Filed Nov. 11, 1971, Ser. No. 197,686
Int. Cl. F16k *15/16*
U.S. Cl. 137—512.15 **8 Claims**

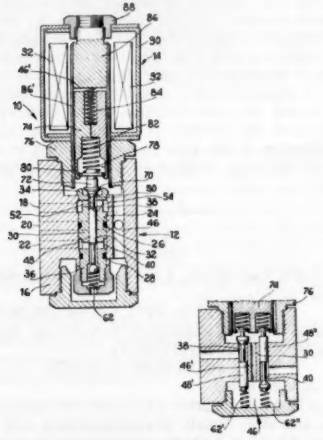


A uniflow valve comprising a pack of flexible plates alternating with valve seats having portions of varying thickness. The flexible plates have inlet channels for the working fluid and at least some part of the flexible plates have teeth which close the fluid inlet channels on the length from the roots to the tops of the teeth. The valve seats are provided with fluid outlet channels facing the spaces between the teeth.

3,823,736
ELECTROMAGNETICALLY OPERATED VALVE

Lamberto Vanti, Milan, Italy, assignor to Sirai S.R.L. Societa Italiana Regolatori Automatici Industriali, Milan, Italy

Filed Feb. 12, 1973, Ser. No. 331,876
Claims priority, application Italy, Feb. 10, 1972, 020448/72
Int. Cl. F16k *11/10*
U.S. Cl. 137—596.17 **4 Claims**

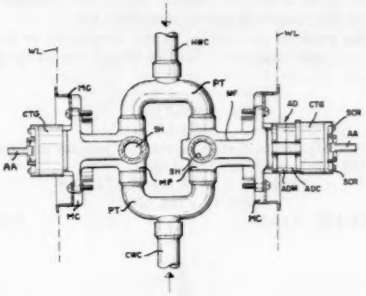


An electromagnetically operated valve, comprising a movable assembly having at least a shiftable component carrying valve means to control passages between valve chambers. The movable assembly and the shiftable component are subjected to balanced axial thrusts due to pressure fluid in each operating position thereof.

3,823,737
ADAPTOR FOR PLUMBING FITTING

Donald Michael Szymanski, Somerville, N.J., assignor to American Standard Inc., New York, N.Y.

Filed July 26, 1973, Ser. No. 382,986
Int. Cl. F16k *19/00*
U.S. Cl. 137—607 **6 Claims**

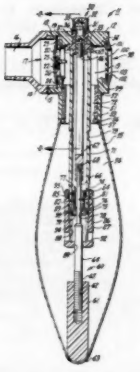


This covers a simple, unitary arrangement for interconnecting (1) the hot and cold water manifold normally inserted within and between the walls of kitchens, bathrooms, etc., of a building and (2) the adjacent plumbing fittings of such rooms of the building, the arrangement minimizing or eliminating the additional piping required for so-called cross-over connections. The arrangement, when applied to back-to-back plumbing fittings, will reverse the hot and cold water lines to one of the two adjacent fittings so that hot water will be made available to the left sides of both of the back-to-back fittings and cold water will be made available to the right sides of both fittings and thereby simplify the usual procedures for making the installations and also reduce the costs of such procedures.

3,823,738
DEMAND VALVE ASSEMBLY

August Edwin Weninger, Cathedral City, Calif., assignor to Bird Corporation, Palm Springs, Calif.

Filed June 19, 1972, Ser. No. 264,395
Int. Cl. A61m *16/00*; **F16k** *31/165*
U.S. Cl. 137—613 **5 Claims**



Demand valve assembly and method for delivery of gases to a patient having a valve body with an outlet adapted to be connected to a patient adapter and an inlet in communication

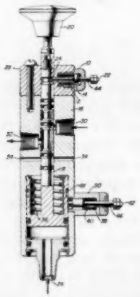
with the outlet for receiving the gases from a high pressure source. Valve means is disposed in the inlet. A distensible generally ellipsoidal bag is connected to the valve body for controlling the operation of the inlet valve as the bag changes its dimensions along its major axis in response to patient breathing. An additional chamber is in communication with the inlet for creating an intermediate pressure which can be used for humidification of the gases or entraining medicants therein. Valve means are provided between the intermediate pressure in the additional chamber and the low pressure contained in the valve body and the distensible bag.

In the method, the changes in the dimensions in the bag along its major axis are sensed to control the filling of the bag.

3,823,739
RELAY

Jeffrey S. McMullan, Lake Charles, La., assignor to Continental Oil Company, Ponca City, Okla.

Filed Feb. 1, 1973, Ser. No. 328,806
Int. Cl. F16k *31/00*
U.S. Cl. 137—624.27 **5 Claims**

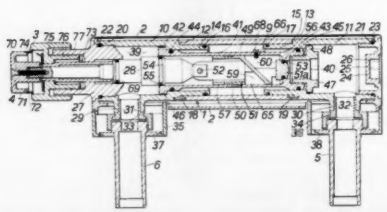


A fail-safe lock-out device is disclosed which retains the piston portion of a pneumatic relay out of service until safety system pressure is returned to operating conditions at which time it releases the piston portion returning the relay to service.

3,823,740
VALVE DEVICE FOR REGULATING MIXTURE AND FLOW OF LIQUID TO A DISCHARGE OUTLET FROM TWO SEPARATE INLETS

Dennis Charles Arbon, Cheltenham, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England

Filed Mar. 29, 1972, Ser. No. 239,054
Claims priority, application Great Britain, Mar. 30, 1971, 8734/71
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.17 **9 Claims**

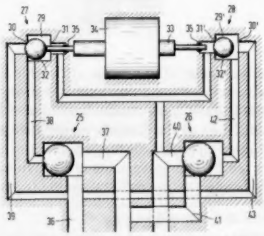


A valve for mixing and controlling the flow of fluid from two different sources, e.g. hot and cold water, the valve including a liner having a port leading to a mixing and discharge chamber and a piston received within the liner for both reciprocating and rotating controlled movement, the piston including two ventricles each for receiving fluid from one source and each ventricle having a port which on controlled piston movement may be brought into register with the liner port to vary both the flow rate by reciprocating movement and to vary the mixture by rotating movement.

3,823,741
FLUIDIC CONTROL ARRANGEMENT

Helmut Hirn, Dusslingen/Wurtt, and Wolfgang Bott, Mossingen/Wurtt, both of Germany, assignors to Riko Maschinenfabrik GmbH & Co. KG, Dusslingen, Germany

Continuation-in-part of Ser. No. 46,639, June 16, 1970, abandoned. This application Oct. 25, 1972, Ser. No. 300,465
Claims priority, application Germany, June 23, 1969, 1931837; Oct. 31, 1969, 1954994; Feb. 2, 1970, 2004567; Feb. 24, 1970, 2008580
Int. Cl. F16k *11/10*
U.S. Cl. 137—625.48 **14 Claims**



A quick-acting control arrangement for hydraulic machinery includes a cylindrical valve chamber formed with a discharge orifice in one radial end wall, a control orifice in the other radial end wall, and a supply orifice in the cylindrical chamber wall near the first-mentioned end wall. Respective conduits connect the discharge orifice to the controlled machinery, the supply orifice to a suitable pump and the control orifice to a valve which may vent the valve chamber to the sump of the pump or connect it to a source or control pressure. A spherical control element in the chamber moves axially to seal the control orifice or the discharge orifice in response to the pressure prevailing at the control orifice. Modification of this valve and applications to single-acting and double-acting reciprocating hydraulic motors are illustrated.

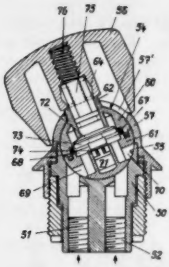
3,823,742
MIXING TAP

Paul Saffin Von Corpon, 4 rue de l'Athenee, Geneva, Switzerland

Filed Mar. 31, 1972, Ser. No. 240,093
Claims priority, application Switzerland, Apr. 6, 1971, 4984/71; Nov. 30, 1971, 17428/71
Int. Cl. F16k *11/18, 5/20*
U.S. Cl. 137—636.3 **3 Claims**

A mixing tap comprises a tap body with hot and cold water inlets and three outlets all communicating with an internal spherical housing in which a spherical control member with an external actuating handle is fluidtightly swivelably mounted. Three peripheral openings in the control member communicate with an inner mixing chamber, the actuating handle serving as means for moving the control member between positions in which the said inlets and outlets selectively communicate with the peripheral openings corresponding to a

desired hot/cold water mixture and selection of one of the outlets by means of a grid guiding the handle. A valve clapper in



the mixing chamber can be actuated to adjust the rate of flow of the desired mixture from the selected outlet by screw operated means on the handle.

3,823,743

PRESSURE REDUCING DEVICE

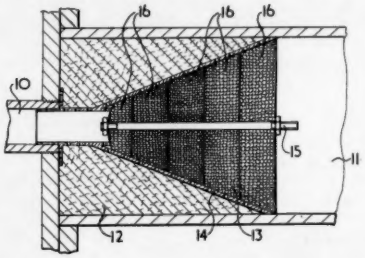
Colin Forbes King, Sutton Coldfield, England, assignor to Dunlap Holdings Limited, London, England

Filed Oct. 26, 1971, Ser. No. 192,146

Claims priority, application Great Britain, Nov. 6, 1970, 52847/70The portion of the term of this patent subsequent to July 18, 1989, has been disclaimed.

Int. Cl. F15d *1/00*

U.S. Cl. 138—42 **15 Claims**



A pressure reducing device comprises an inlet for high pressure gas, an outlet for low pressure gas and a path therebetween for flow of gas from inlet to outlet, said path including at least one porous baffle having an inner portion made of porous material disposed in an inner zone of said path and an outer portion comprising a fibrous medium disposed in an outer zone of said path, the inner portion having a lower flow resistance than the outer portion. The porous materials used for the inner portion of the baffle include: layers of gauze, expanded metal, sintered metal, ceramic foams and plastics foams such as rigidified foams. The fibrous materials used for the outer portion of the baffle include; spun mineral fibers, natural fibers and glass wool.

3,823,744

PIPE PROTECTOR

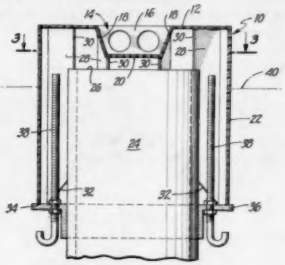
Duane D. Logsdon, 1719 Canyon Rd., Fullerton, Calif. 92631

Filed Oct. 6, 1972, Ser. No. 295,455

Int. Cl. B65d *59/06*

U.S. Cl. 138—96 R **2 Claims**

A pipe protector for use in protecting a pipe having an end as concrete is located adjacent to the pipe end and in providing a cavity within the concrete extending around the pipe adjacent to the pipe end preferably is constructed as a single unit out of a polyolefin polymer such as polyethylene which is substantially incapable of bonding to concrete as the concrete sets. Such a protector includes a top having a handle adapted to be used for removing the protector after concrete has been cast around it, a dependent skirt attached to the top which is



capable of fitting around the pipe adjacent to the pipe end and at least three spacing fins attached to the skirt so as to extend radially inwardly from the skirt. The fins are capable of engaging the exterior of the pipe so as to stablize the protector and are sufficiently flexible so as to absorb at least some forces applied to the exterior of the skirt so as to tend to cushion the pipe against damage.

3,823,745

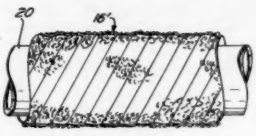
FLAME-RESISTANT CONDUIT COVERING

Ralph Schafenacker, Jr., Doylestown, Pa., assignor to Keller Glove Mfg. Company, Plumsteadville, Pa.

Filed Nov. 6, 1972, Ser. No. 303,919

Int. Cl. F16l *11/12*

U.S. Cl. 138—103 **9 Claims**



A flame-resistant conduit covering knitted from an organic material such as flame-retardant rayon having looped pile on at least one surface thereof is disclosed. The knitted material is free from any finish which releases substantial amounts of toxic gases other than CO or CO_2 when subjected to heat, whereby it may be used in place of prior art conduit coverings made from a flame-retardant material such as asbestos.

3,823,746

FIBER-REINFORCED PLASTIC TUBING WITH CONTINUOUS FIBERS, FOR PRESSURIZED WATER CONDUITS IN THE GROUND

Borge Ingmar Carlstrom, Postalde, 317, Sweden

Filed Sept. 29, 1971, Ser. No. 184,932

Int. Cl. F16l *9/14*

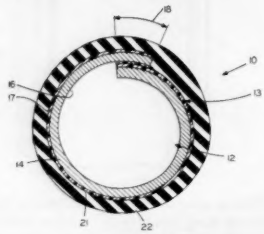
U.S. Cl. 138—144 **6 Claims**

For fiber-reinforced plastic tubing which is to be laid in the ground and subjected to inner over-pressure the windings of continuous fibers are concentrated in the central part of the wall of the tube, thereby minimizing flexural stress of the fibers.

3,823,747
TUBULAR MEMBER HAVING A SEALED LONGITUDINAL SEAM

Matthew R. Dembiak, Clifton, N.J., and George H. Webster, Timonium, Md., assignors to Western Electric Company, Incorporated, New York, N.Y. and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 125,362, March 17, 1971, Pat. No. 3,703,605, which is a continuation-in-part of Ser. No. 809,589, March 24, 1969, abandoned. This application Aug. 2, 1972, Ser. No. 277,189
Int. Cl. F61l 9/14
U.S. Cl. 138—141 **11 Claims**

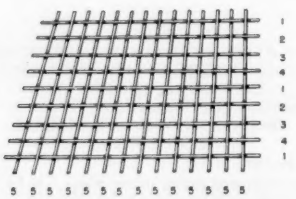


Successive portions of an aluminum tape having one major surface thereof coated with an adhesive copolymer across the entire transverse width thereof and the other major surface precoated with a stripe of adhesive material along an edge portion are folded longitudinally as the successive sections of the tape are being advanced along a predetermined path to form an overlapped seam so that the adhesive copolymer on an edge portion of the one major surface of the tape overlaps the stripe. Subsequently, the adhesive materials on the major surfaces along the overlapped seam develop an adhesive bond by the application of heat and pressure prior to or during the extrusion of a plastic jacket over the tape. The adhesive material on the other, now inwardly facing, major surface is substantially restricted in location and is adhesively bonded to the portion of the inwardly facing major surface of the tape which forms the overlapped seam with a portion of the one, now outwardly facing, major surface. The remaining portion of the inwardly facing major surface of the aluminum tape is bare and the resulting tubular member may be used in a variety of ways.

3,823,748
ENERGY ABSORBENT TEXTILE STRUCTURE

William T. Allman, Ashland, Va., and Gungor M. Solmaz, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 226,235, Feb. 14, 1972, which is a continuation of Ser. No. 881,809, Dec. 3, 1969, abandoned. This application Feb. 16, 1973, Ser. No. 333,252
Int. Cl. D03d 15/00
U.S. Cl. 139—383 R **4 Claims**

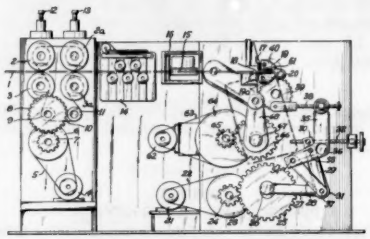


Impact absorbent textile structures constructed of substantially unidirectional yarns having differential elongations at the break exhibit sufficient extensibility to minimize residual recovery without impairment of strength.

3,823,749
BENDING MACHINE FOR WIRE OR STRIP

Josef Ritter; Hans Gott; Klaus Ritter; Otto Gamillscheg; Wilhelm Boyer, and Gerhard Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-u. Verwertungsgesellschaft m.b.H., Graz, Austria

Filed Jan. 11, 1973, Ser. No. 322,878
Claims priority, application Austria, Apr. 12, 1972, 3182/72
Int. Cl. B21f 1/00
U.S. Cl. 140—105 **6 Claims**

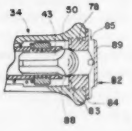


The invention is concerned with a bending machine for wire or strip in which the raw material is advanced through the machine step by step and, between each step, a bend is made by a mobile bending tool. The bending tool is retractable from a working position on one side of the path of advance of the material, moveable to the other side of the path without intersecting the path and advancable into a working position on the other side of the path of the advance of the material, so that the tool may be used for bending the material selectively in either direction out of the path of the advance of the material.

3,823,750
VACUUM NOZZLE DEVICE

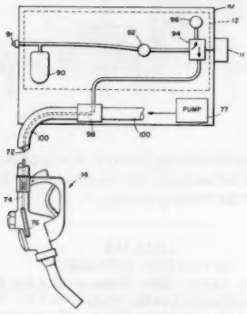
Dave L. Owen, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

Division of Ser. No. 844,883, July 25, 1969, Pat. No. 3,628,576. This application Feb. 8, 1971, Ser. No. 113,703
Int. Cl. B65b 31/04
U.S. Cl. 141—65 **2 Claims**



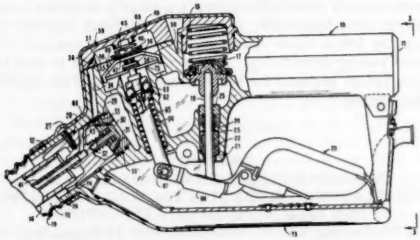
A manually operated vacuum device for withdrawing air from a package, and positioning the package for closing. The device has only 4 basic parts that may be disassembled and assembled by hand, a suction tube, a slide tube mounted on the suction tube for reciprocation thereon, a nozzle at the entrance to the slide tube and a valve means trapped between the nozzle and the suction tube for valving the device in response to reciprocation of the slide tube. A special nozzle is of shallow depth and has a closed end with ports entering from the side. Another special nozzle member has a sump in its tip and narrow slot openings entering into its vacuum evacuated bore.

3,823,751
FLUID DISPENSER CONTROL SYSTEM
James W. Healy, Wakefield, Mass., assignor to Automatic Systems, Inc., Waltham, Mass.
Filed June 13, 1973, Ser. No. 369,460
Int. Cl. B65b *1/30*
U.S. Cl. 141—198 20 Claims



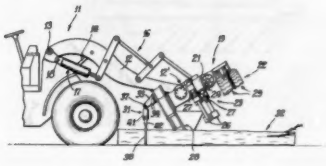
A system for use with a fluid dispensing apparatus having a fluid flow metering mechanism and a nozzle including an automatic pressure differential-actuated full tank shutoff. The system comprises a holding tank, means for maintaining the pressure in the tank at a differential with respect to atmospheric pressure and for connecting the holding tank to the nozzle to actuate the shutoff, and a mechanical selector operatively linked to the metering sustem and to the first mentioned means for actuating those means when substantially a predetermined amount of fluid has been dispensed through the nozzle.

3,823,752
LIQUID DISPENSING NOZZLE OF THE AUTOMATIC SHUT-OFF TYPE
Donald A. Lasater, Cincinnati, and Chester W. Wood, Milford, both of Ohio, assignors to Dover Corporation, New York, N.Y.
Filed Dec. 26, 1972, Ser. No. 318,237
Int. Cl. B65b *3/26, 57/14;* B67c *3/00*
U.S. Cl. 141—217 9 Claims



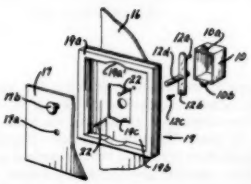
An automatic shut-off nozzle has a single diaphragm responsive to either the vapor pressure in the tank which is being filled exceeding a predetermined pressure or the liquid in the tank reaching a predetermined level. When the liquid in the tank reaches the predetermined level, the diaphragm moves in one direction to cause closing of a manually operated valve which stops flow through the nozzle through a connecting mechanism. When the pressure in the tank exceeds a predetermined pressure, the diaphragm moves in the opposite direction, but the connecting mechanism has transfer links to cause the valve to again be closed even though the diaphragm moves in the opposite direction.

3,823,753
TREE HARVESTER WITH SUPPLEMENTAL GRAPPLE
Raymond L. Moser, Tremont, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Apr. 9, 1973, Ser. No. 348,928
Int. Cl. B27c *9/00*
U.S. Cl. 144—3 D 8 Claims



A tree harvester including a tree harvester assembly pivotably mounted on a vehicle with a grapple mechanism arranged on the harvester assembly for engaging a tree and raising it into a processing position by pivotable movement of the tree harvester assembly.

3,823,754
METHOD FOR CUTTING OPENINGS IN PANELING OR THE LIKE
William R. Nix, 200 S. Tekoppel Ave., Evansville, Ind. 47712
Division of Ser. No. 6,906, Jan. 29, 1970, Pat. No. 3,733,707.
This application Feb. 12, 1973, Ser. No. 332,026
Int. Cl. B27c *1/00*
U.S. Cl. 144—323 1 Claim

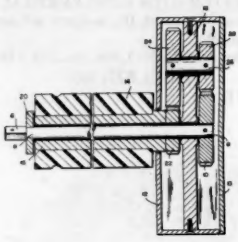


A method and structure for simplifying the cutting of an opening in paneling, wallboard or the like, as for access to an electrical outlet box, characterized by the use of a jig having a centering pin, where the jig is removably secured to the electrical outlet box, a guide plate having an opening which receives such centering pin, and a template surrounding the guide plate. After removing the guide plate, and with the use of a conventional router in combination with the template, an accurate opening for the electrical outlet box is readily achieved.

3,823,755
GEARED SCREWDRIVER
George V. Sheffield, 133 Van Dyke Rd., Hopewell, N.J. 08525
Filed Apr. 26, 1973, Ser. No. 354,779
Int. Cl. B25b *15/02*
U.S. Cl. 145—50 R 1 Claim

A geared screwdriver having an improved mechanical advantage. The tool is provided with a gear train in driven connection with a screwdriver shank. The latter is disposed to

turn within its handle. The gear train is housed in a structure which can be turned to operate the shank with the handle remaining fixed or, in the alternative, the latter may be turned



to drive the shank with the housing fixed in place affording a different mechanical advantage from that which is afforded in the first mode of operation.

3,823,756

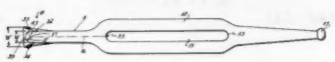
MOUNTING HEAD FOR A TIRE TOOL

Donald B. Rainey, Hamilton, Ohio, assignor to Magnum Automotive Equipment, Inc., Cincinnati, Ohio

Filed Jan. 30, 1973, Ser. No. 328,010

Int. Cl. B60c *25/04*

U.S. Cl. 157—1.3 **4 Claims**



An improved mounting head for a tire tool, the mounting head being adapted for either clockwise or counterclockwise rotation (on either an automatic or manual tire changing machine) as desired by the operator. The mounting head is characterized by a forehead that is curved on its leading surface and that extends upward and forward, and a lip that is curved downward and rearward, the forehead and the lip merging together at a mouth. The curvature axis of the lip (which lies parallel to the tool's *x* plane) is tranversely disposed relative to the curvature axis of the forehead (which lies in the tool's *Y* plane). The forehead and lip are further characterized by being fully symmetrical about the *Y* plane, the tool's *x* and *Y* planes being at right angles one to the other.

3,823,757

APPARATUS FOR USE IN MOUNTING TIRES ON AND REMOVING TIRES FROM WHEEL RIMS

Derek Hogg, Sutton Coldfield, England, assignor to Dunlop Limited

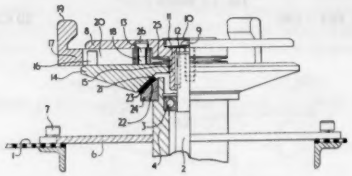
Filed June 14, 1972, Ser. No. 262,745

Claims priority, application Great Britain, June 23, 1971, 29358/71

Int. Cl. B60c *25/10*

U.S. Cl. 157—1.24 **4 Claims**

Apparatus for use in mounting tires on and removing tires from wheel rims comprising a wheel supporting means which comprises three slideable and pivotal arms mounted between two rotatable coaxial plates which on being relatively rotated cause the arms to pivot and slide thereby gripping a wheel. The first plate is rotatably driven and the second plate is continuously engaged by braking means. Resilient means act on the second plate to increase the reaction force between the second plate and the braking means.



3,823,758

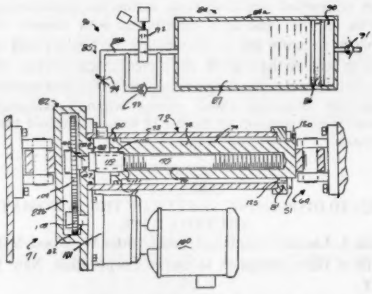
ACTUATOR ASSEMBLY

William E. Heese, Akron, Ohio, assignor to Allen Electric and Equipment Company, Orrville, Ohio

Filed Dec. 3, 1970, Ser. No. 94,802

Int. Cl. E05f *15/04*

U.S. Cl. 160—188 **14 Claims**



A power operated hatch cover assembly including a pair of hatch covers hinged together and actuating assemblies for moving the hatch covers between closed and open positions. Each actuating assembly includes a pair of actuators which are simultaneously operated to produce a varying actuating force with the total force being greater than the force required to open the hatch cover assembly. One actuator operates on stored energy derived from closing the hatch and in case of power failure prevents the hatch cover assembly from rapidly falling closed.

3,823,759

METHOD FOR PROVIDING AND USING AN INSTALLATION FOR THE ELECTROSLAG REMELTING OF METALLIC CONSUMABLE ELECTRODES

Jury Vadimovich Latash; Boris Izrailevich Medovan, both of Kiev; Semen Abramovich Leibenzow, and Gary Petrovich, both of Zaporozhie, all of U.S.S.R., assignors to Patent Management Inc., Washington, D.C.

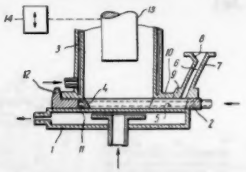
Division of Ser. No. 669,608, Sept. 21, 1967, abandoned. This application July 16, 1971, Ser. No. 163,483

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 **12 Claims**

Method for the electroslag remelting of metallic consumable electrodes by providing and operating an electroslag remelting apparatus comprising a bottom plate, a discrete slag

inlet means disposed on said bottom plate and a hollow mold disposed on the latter, said slag inlet means establishing fluid-flow communication between said mold and an access port



outside of said mold into which slag may be poured. A removable slag inlet conduit is provided in fluid-flow communication with the slag inlet in said slag inlet means.

3,823,760

LOW PRESSURE DIE CASTING APPARATUS

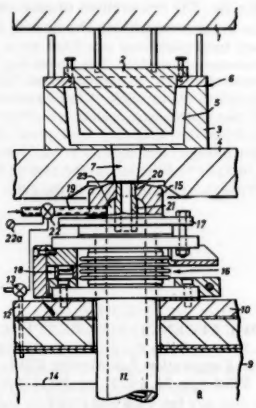
Francis Richard Bloomfield, Enfield, and Gordon David Cooper, Abergavenny, both of England, assignors to Soag Machinery Ltd., Brentford, England

Filed Oct. 12, 1972, Ser. No. 296,810

Claims priority, application Great Britain, Oct. 18, 1971, 48387/71

Int. Cl. B22d *17/14*

U.S. Cl. 164—113 **1 Claim**



A method of low pressure die casting in which molten metal is forced upwardly from a furnace into a die through a riser tube extending below the level of the molten metal in the furnace by gas pressure applied to the surface of the metal. To avoid the formation of oxides in the metal, an inert gas, heavier than air, is introduced into the riser tube adjacent the die to fill the riser tube above the level of the metal in the furnace. On application of gas pressure to the molten metal in the furnace, as the metal rises in the tube, the inert gas expels out from the die cavity. After solidification of the metal in the die and removal of the gas pressure to the furnace, excess molten metal falls back by gravity into the furnace, the inert gas again filling the space above the metal in the tube to prevent ingress of air at the interface between the sprue orifice of the die and the riser tube. A low pressure die casting apparatus is disclosed which includes an apertured cap on the riser tube for engagement with the sprue orifice, the cap being provided with an inlet for an inert gas.

3,823,761

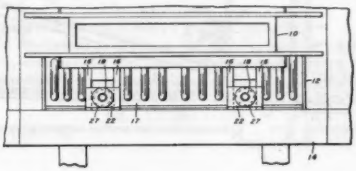
QUICK RELEASE MECHANISM FOR CONTINUOUS CASTING MOLD SUPPORT FRAME

Charles H. Bode, Jr., Upper St. Clair Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 167,723, July 30, 1971, Pat. No. 3,777,436. This application May 7, 1973, Ser. No. 357,765

Int. Cl. B22d *11/00*

U.S. Cl. 164—273 R **5 Claims**



A quick release mechanism for releasably attaching a continuous casting mold oscillating frame to a support. A bolt is fixed to the support and carries a spring and rotatable anchor block between the nut and bolt head, whereby the anchor block can be seated in a recess in the frame by a minimal movement of the nut.

3,823,762

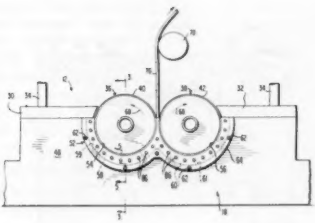
ROLL-COUPLE, CONTINUOUS-STRIP CASTER

Erich F. Wondris, Pittsburgh, Pa., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Mar. 21, 1973, Ser. No. 343,494

Int. Cl. B22d *11/06*

U.S. Cl. 164—277 **9 Claims**



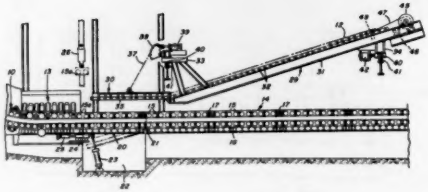
Roll-couple, continuous-strip caster in which arcuate, resilient refractory seals are employed to elastically adapt to the peripheral surfaces of the casting rolls and establish sealing contact with the rolls to prevent flow of molten metal between rolls and vessel walls. The seals can be segmented for movement toward the casting rolls, to accommodate wear of the seals while still maintaining sealing contact with the rolls. The seals can be moved axially along the rolls to adjust the width of the cast strip without interruption of the casting operation. Peripheral bands of thermal insulation can be employed on the rolls, which are water-cooled, to reduce heat transfer from the seals to the rolls and thereby reduce tendency for molten metal to solidify on the seals. Heaters in the seals can be used to further reduce such tendency.

3,823,763

RAMP-TYPE APPARATUS FOR DISCONNECTING AND STORING A FLEXIBLE STARTER BAR

Gottfried Hofmann, Lutzelfluh-Goldbach, Switzerland, and George J. Wagner, N. Fayette Township, Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 19, 1972, Ser. No. 298,886
Int. Cl. B22d *11/08*
U.S. Cl. 164—282 7 Claims



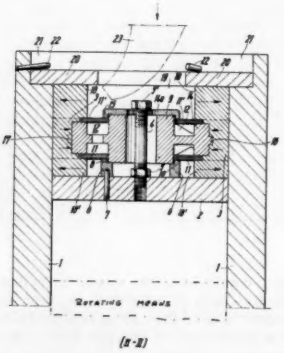
A ramp-type apparatus for disconnecting and storing a flexible starter bar of a continuous casting machine. The ramp is formed of long and short sections. The long section is supported at a fixed angle on two carriages, whereby the ramp can move transversely of the casting machine to get it out of the way. The short section is hinged to the long section and suspended from one of the carriages. Hence only the short section need be raised and lowered to disconnect or charge the starter bar.

3,823,764

APPARATUS FOR CENTRIFUGALLY CASTING AN ANNULUS OF METAL ABOUT A HUB

Willi Schmitz, Andernach, Rhine, Germany, assignor to Mittelrheinische Metallgiesserei H. Beyer KG, Andernach, Germany

Filed May 18, 1972, Ser. No. 254,365
Int. Cl. B22d *13/04*
U.S. Cl. 164—288 5 Claims



(II-II)

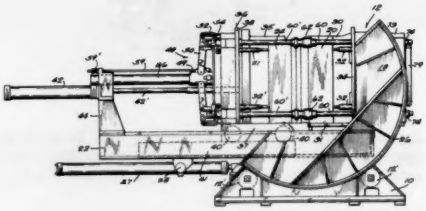
A hub member is accommodated in the cavity of an upright mold, whereupon the latter is rotated with the hub member and metal which is to form the outer annular part of the gear is introduced into the mold to become united with the hub member by centrifugal casting. An apparatus for carrying out this method is also disclosed.

3,823,765

DIE CASTING MACHINE

Nic J. Watry, Fort Myers, Fla., assignor to Watry Industries Inc., Sheboygan, Wis.

Filed Sept. 5, 1972, Ser. No. 286,410
Int. Cl. B22d *17/10*
U.S. Cl. 164—303 5 Claims



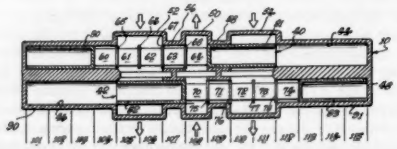
A die casting machine in which two die half sections are moved between a closed pouring position and an open position at which the cast piece is removed. The die half sections are mounted on a stationary and a movable base plate respectively, both of which are incorporated in a frame which can be rotated between an upstanding pouring position and a horizontal position at which the casting is removed. When in the pouring position, the die half sections are locked together by four two-piece tie rods which extend between the movable and stationary base plates and which are located at each of the corners of the die. The two sections of each tie rod are interconnected by bayonet couplings. The tie rods extend through the stationary base plate and are fixed to a platen located below the stationary base plate. The platen is connected to the stationary base plate by a parallelogram linkage and two hydraulic cylinders. After each of the bayonet couplings are engaged, the two hydraulic cylinders are actuated to move the platen away from the stationary base plate. Because of the parallelogram linkage, this motion is uniformly imparted to each of the tie rods and therefore, the closing force of the die is uniform throughout the interface of the die.

3,823,766

DYNAMIC REGENERATIVE HEAT EXCHANGER

Kenneth W. Sawyer, Palos Verdes Peninsula, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 22, 1971, Ser. No. 136,430
Int. Cl. F28d *19/04*
U.S. Cl. 165—1 10 Claims



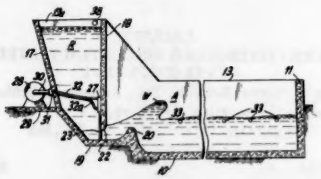
Described is an axial, piston-type, dynamic regenerative heat exchanger.

3,823,767

PROCESS FOR TREATING WATER

Minor E. McLaughlin, Newfane, Vt., assignor to Economic Development Corporation, Brattleboro, Vt.

Filed Feb. 29, 1972, Ser. No. 230,424
Int. Cl. F28d 5/00
U.S. Cl. 165—1 6 Claims



A process for treating a body of water to cool and to increase the dissolved oxygen content of the water which involves producing controlled translatory waves in the body of water. The process includes storing water in a reservoir at a selected height above the level of the body of water, periodically releasing specified quantities of water from the reservoir at a point below the level and in an upward direction toward the surface and into the body of water. The upward direction of the released water is accomplished by releasing the water against a deflector located near the base of the reservoir. The released water forms a translatory wave in the body of water and as it moves away from the reservoir, it breaks causing effective mixing of air and water, cooling the water and increasing the oxygen content of the water. The translatory wave produced is referred to as a plunger breaker type. In this type of wave, the waves curl over in breaking enclosing an air pocket which explodes during the breaking process. This action accomplishes excellent mixing of air and water and where solid particles are present, breaking and pulverizing of the particles.

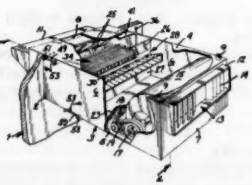
The process may be used in conjunction with natural or artificial bodies of water and provisions are made with artificial bodies for removal of water at a point remote from the point of wave formation at a rate substantially equal to the average rate of addition of water from the reservoir. The invention pertains to cooling water effluent from power generation stations to prevent thermal pollution of natural bodies of water. The invention in another embodiment pertains to a more efficient method of aerating and treating sewage.

3,823,768

AIR CONDITIONING APPARATUS

John F. Finger, Beresford, S. Dak., assignor to Sioux Steam Cleaner Corporation, Beresford, S. Dak.

Filed Jan. 31, 1973, Ser. No. 328,273
Int. Cl. F25b 29/00
U.S. Cl. 165—48 5 Claims



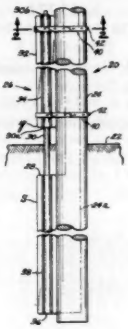
An elongated generally rectangular housing having air inlet and discharge openings in its opposite ends, a cooling element and a heating element being mounted within the housing in spaced relationship longitudinally of the housing. A blower is mounted in the housing for receiving air from the interior of the housing and delivering conditioned air outwardly through the discharge opening. A damper arrangement provides for heat directing air selectively through or past the cooling element for controlling the temperature of air being delivered to the discharge opening of the housing.

3,823,769

SEPARABLE HEAT PIPE ASSEMBLY

John H. Anderson, and Elmer D. Waters, both of Richland, Wash., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Nov. 2, 1972, Ser. No. 303,221
Int. Cl. F28d 15/00
U.S. Cl. 165—76 10 Claims



A separable heat pipe assembly for stabilizing the generally frozen soil adjacent and supporting a structural member or foundation in permafrost or similar regions, including a cooperative combination of a sheath installed in the frozen soil and a closely mating heat pipe element normally inserted into the sheath with a substance of good thermal conductivity filling the small void remaining therebetween. The underground sheath preferably has a plurality of heat gathering fins and the mated heat pipe element preferably has an integral radiator section protruding aboveground. The thermal substance is preferably a liquid mixture of water and ethylene glycol, for example, mixed in a selected ratio.

3,823,770

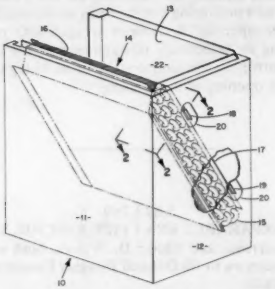
HEAT EXCHANGE ASSEMBLY

Richard J. Duell, Syracuse, and Fred V. Honnold, Jr., North Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,794
Int. Cl. F28f 7/00
U.S. Cl. 165—76 6 Claims

A heat exchange assembly comprising a casing including a wall having at least one slot defined therein, said casing defin-

ing a chamber. A heat exchange coil is disposed in the chamber of the casing and includes at least one tab extending

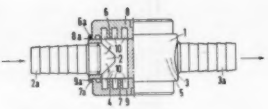


from an end thereof, the tab being inserted into the slot in the wall of the casing to secure the heat exchange coil within the chamber.

3,823,771
COOLING BOX FOR INSTALLATION IN STACKS OF DISK-CELLS

Klaus Ludwig, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 4, 1972, Ser. No. 311,568
Claims priority, application Germany, Dec. 4, 1971, 2160302
Int. Cl. H01l *3/00*
U.S. Cl. 165—80 **5 Claims**

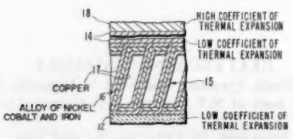


A flat cooling box for capsuled disk-cells is disclosed consisting of two round cooling pots at both sides of a flat connecting piece, provided with concentric annular grooves for cooling fluid and current supply. Inflow and outflow channels are directed through the center of the circle with symmetrical passages in communication with the annular grooves. The cooling pots are connected with their connecting piece through annular riveting.

3,823,772
ELECTRICAL INSULATOR ASSEMBLY

Gordon R. Lavering, Belmont, and Jules S. Needle, Palo Alto, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Dec. 8, 1972, Ser. No. 313,369
Int. Cl. F28f *7/00*; H01j *1/02*
U.S. Cl. 165—81 **12 Claims**


HIGH COEFFICIENT OF THERMAL EXPANSION
LOW COEFFICIENT OF THERMAL EXPANSION
COPPER
ALLOY OF NICKEL COBALT AND IRON
LOW COEFFICIENT OF THERMAL EXPANSION

An electrical insulator body is supported from a surrounding structure via the intermediary of a plurality of yieldable support members. The yieldable support members, in a preferred embodiment, are annular truncated conical members bonded to the outside surface of the insulator body and to the inside surface of the surrounding member. In a preferred embodiment the conical support members are made of a copper clad or copper plated alloy of nickel, cobalt and iron to provide increased thermal conductivity between the insulator body and the surrounding structure.

3,823,773
PRESSURE CONTROLLED DRILL STEM TESTER WITH REVERSING VALVE

Benjamin P. Nutter, Bellville, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,368
Int. Cl. E21b *47/00*
U.S. Cl. 166—.5 **18 Claims**

Methods and apparatus for testing offshore wells with testing equipment operated in response to changes in the pressure of fluids in the well annulus, wherein the test valve is opened and closed in response to such pressure changes to alternately flow and shut-in the formations, and a reversing valve is automatically opened after a predetermined minimum number of pressure changes have occurred to enable fluids received in the pipe string to be removed before withdrawing the test tools from the well.

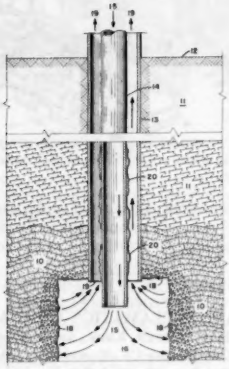
3,823,774
DIGESTED ALKALINE TALL OIL PITCH SOAP COMPOSITION

Ying C. Chiu, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 235,039, March 15, 1972, abandoned, and a continuation-in-part of Ser. No. 235,088, March 15, 1972, abandoned. This application Apr. 16, 1973, Ser. No. 351,738
Int. Cl. E21b *43/16*
U.S. Cl. 166—252 **11 Claims**

The oil in a subterranean reservoir is advantageously displaced by injecting into the reservoir an aqueous surfactant system containing a digested alkaline tall oil pitch soap composition produced by heating a mixture of tall oil pitch and an excess of aqueous base for a time and temperature that yields a substantially completely water soluble digestion product.

3,823,775
METHOD FOR UPGRADING COAL GASIFICATION PRODUCTS
Roger C. Parsons, and Kang Yang, Ponca City, both of Okla., assignors to Continental Oil Company, Ponca City, Okla.
Filed Apr. 30, 1973, Ser. No. 355,854
Int. Cl. E21b *43/24*
U.S. Cl. 166—260 10 Claims



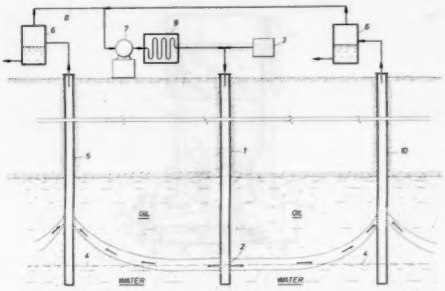
A method for upgrading gasification products produced by the gasification of subterranean carbonaceous deposits and recovered through a well bore by contacting said products with an effective amount of a suitable catalyst positioned in said well bore.

3,823,776
OIL RECOVERY METHOD BY OXIDATION AND FORMING SURFACTANTS IN SITU
Billy G. Holmes, Lancaster, Tex., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Apr. 26, 1973, Ser. No. 354,823
Int. Cl. E21b *43/22, 43/24*
U.S. Cl. 166—261 6 Claims

This specification discloses a method of producing oil from an oil-containing subsurface formation penetrated by an injection well and a production well. An oxygen-containing gas is injected into the formation to rapidly oxidize a portion of the oil therein and establish a stabilized in situ combustion zone. The oxidation of the oil forms organic acids within and surrounding the in situ combustion zone. An aqueous caustic solution is injected into the formation to quench the combustion within the in situ combustion zone and to react with the organic acids within and surrounding the in situ combustion zone and form surfactants in situ. Oil is produced from the formation facilitated by the surfactants and the heat of the in situ combustion zone.

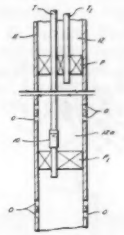
3,823,777
MULTIPLE SOLVENT MISCIBLE FLOODING TECHNIQUE FOR USE IN PETROLEUM FORMATION OVER-LAYING AND IN CONTACT WITH WATER SATURATED POROUS FORMATIONS
Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.
Filed May 4, 1973, Ser. No. 357,410
Int. Cl. E21b *43/16*
U.S. Cl. 166—266 18 Claims

A petroleum recovery method employing a mixed solvent for use in formation in contact with and over-laying a substantially water saturated porous formation which is prone to bottom water coning. The mixed solvent density is less than the density of water and greater than the density of the formation petroleum, and has a boiling point less than the boiling point of the formation petroleum. The solvent is injected into the



formation near the petroleum-water interface and the mixture comprising solvent and petroleum is recovered from production wells. The solvent may be separated from the produced petroleum-solvent mixture by distillation and recondensation for reinjection into the formation.

3,823,778
METHOD OF COMPLETING A WELL USING A COMPLETION AND KILL VALVE
James D. Mott, Houston, Tex., assignor to Hydril Company
Division of Ser. No. 138,947, April 30, 1971, Pat. No. 3,750,752. This application Mar. 26, 1973, Ser. No. 344,602
Int. Cl. E21b *41/00*
U.S. Cl. 166—313 24 Claims

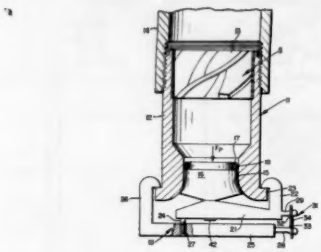


A completion and kill valve adapted to be placed immediately above a packer in the well production tubing including a tubular member having an inner bore and a circulation channel therein permitting communication between the inner bore and the well annulus area adjacent the exterior of the tubular member. A movable sleeve closes or opens communication through the circulation channel in response to various pressures and a spring bias acting on the sleeve. Provisions for locking the sleeve in the open position and subsequently unlocking the sleeve in response to inner bore pressure are provided.

3,823,779
FIRE EXTINGUISHING SYSTEM NOZZLE
Johann A. Stamm, Export, and Siavash Eshghy, Pittsburgh, both of Pa., assignors to Factory Mutual Research Corporation, Norwood, Mass.
Filed Jan. 30, 1973, Ser. No. 327,960
Int. Cl. A62c *37/08*
U.S. Cl. 169—39 14 Claims

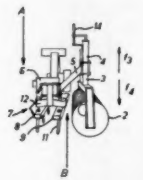
The discharge outlet plug of a fire extinguishant nozzle is retained by an external lever system that is conditioned by the

operation of a heat fusible means in response to the presence of a first temperature rise to permit release of the plug under fluid pressure in the nozzle. An overriding beam arrangement is provided to prevent release of the plug unless the nozzle



fluid pressure exceeds a predetermined pressure floor, and in some forms a temperature responsive override arrangement is provided to disable the overriding beam arrangement in the presence of a materially higher temperature rise to permit the plug to be expelled by fluid pressures below the pressure floor.

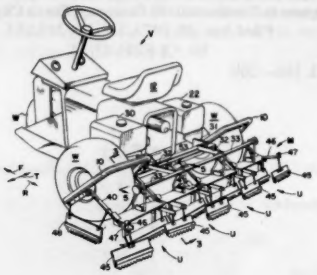
3,823,780
COMPACT GROUND PREPARING ROLLER
Adolphe Crete Guerin, 98, route Nationale, Mezieres, France
Filed Aug. 8, 1972, Ser. No. 278,800
Claims priority, application France, Aug. 16, 1971, 71.29867
Int. Cl. A01b *5/00*
U.S. Cl. 172—150 **1 Claim**



Ground preparing device comprising a harrow frame and a roller frame, the teeth of the harrow disrupting the ground ahead of the roller and the roller compacting the earth behind the harrow, wherein a leveller deflector distributes the excess earth thicknesses.

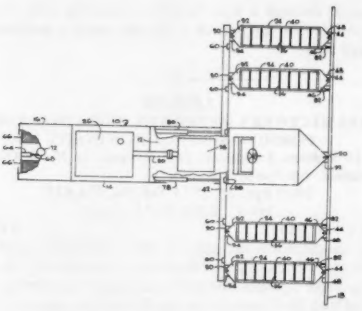
3,823,781
VEHICLE AND SAND-TRAP RAKE
Joseph M. Check, Minneapolis, Minn., and Ronald E. Lewis, Hanover, N.H., assignors to The Toro Company, South Minneapolis, Minn.
Filed Jan. 5, 1973, Ser. No. 321,227
Int. Cl. A01b *13/00*
U.S. Cl. 172—192 **2 Claims**

A three wheeled, with equal weight distribution, vehicle with lesser torque capacity to the single front wheel relative to the torque capacity to each rear wheel and specifically designed to operate in a golf course sand-trap. A multi-unit sand-trap rake assembly adapted to be drawn by the vehicle. Each unit rake assembly including a carrier frame pivotally connected to the frame of the vehicle, two vertical support bars downwardly depending from the carrier frame and connected to a breaker bar that is drawn beneath the surface of the sand to break the bonds between the sand particles. The multi-unit assembly including a first row of smoothing plates pivotally connected to the carrier frames, a second row of



dressing plates pivotally connected to the carrier frame, and side dressing plates each smoothing and dressing plate having a lower serrated edge for dressing the surface of the sand-trap.

3,823,782
LAND RECLAMATION APPARATUS
John W. Howland, Stilwell, Kans., assignor to The Pittsburgh & Midway Coal Mining Co., Kansas City, Mo.
Filed Nov. 20, 1972, Ser. No. 307,888
Int. Cl. E02f *3/76*
U.S. Cl. 172—292 **12 Claims**

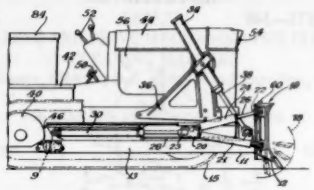


An improved earthmoving apparatus particularly suited for use in land reclamation operations comprising a cutting and casting blade which may be articulated through either a left or right angle, relative to the direction of operation, of at least 45°. A plurality of power modules are disposed at spaced intervals along and behind the cutting and casting blade such that they remain at substantially the same distance from the blade when the blade is articulated. By providing power to the blade in this manner, the adverse effects of side thrust and turning moments inherent in most angle blade operations are significantly reduced.

3,823,783
POWER PITCHING AND ANGLING BULLGRADER
Ronald E. Luedtke, Elmhurst, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Jan. 29, 1973, Ser. No. 327,286
Int. Cl. E02f *3/76*
U.S. Cl. 172—802 **4 Claims**

Power adjusted bulldozing attachment for a tractor having a C-frame and a bullgrading blade thereon capable of pitching, tilting, and single and double angle angling. An intermediate

region of the blade has a universal mounting to the front of the C-frame. Pairs of strut members incorporating power units are connected to the end sections of the blade and to the legs of the C-frame for pitching and tilting the blade. The blade is angled by shifting the struts by means of power pistons on the legs of the C-frame. Piston locks fix the struts at locking points on the frame legs so that the blade, formed of bisected sections, can have the sections swung similarly to single angles or oppositely for double angle contouring.

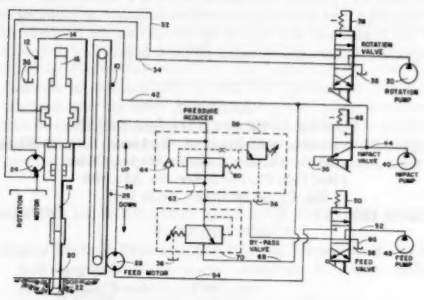


3,823,784

METHOD AND APPARATUS FOR CONTROLLING HYDRAULIC DRIFTERS

Jacob Edward Feucht, Sidney, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 8, 1973, Ser. No. 368,152
Int. Cl. E21b *5/00*
U.S. Cl. 173—1 **9 Claims**



Disclosed herein is a hydraulic circuit for use in conjunction with a hydraulic drifter or impact mechanism used for drilling holes in connection with mining or the like. The hydraulic circuit described is arranged to provide for the rotation of the drill, to supply hydraulic fluid to the drifter for causing reciprocation of the bit, and to supply hydraulic fluid to a feed mechanism to maintain the drifter in engagement with the formation to be drilled. The circuit is arranged to provide for the automatic diversion of a portion of the feed mechanism fluid supply when the pressure in the feed mechanism exceeds a predetermined value. The diverted fluid is supplied to the impact mechanism to provide additional power when the feed mechanism is at or near the stall condition.

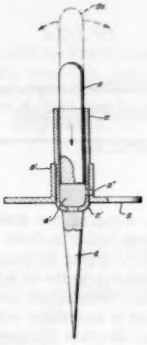
3,823,785

SELF-DRIVE SUPPORT AND ANCHOR FOR SUPPORTING ELEMENTS

George W. Toliver, 2035 Landen St., Camarillo, Calif. 93010

Filed June 27, 1973, Ser. No. 374,260
Int. Cl. B25d *1/00*
U.S. Cl. 173—90 **3 Claims**

A light-weight, portable, self-driving support and anchor for parasols, umbrellas, flagpoles and other substantially vertical supporting elements for temporary structures, enclosures or decorative purposes, the support and anchor being characterized by its ability to be easily fixed, driven and firmly positioned without the use of extraneous tools in soils or ground of various degrees of compactness, including sandy beaches, sun-



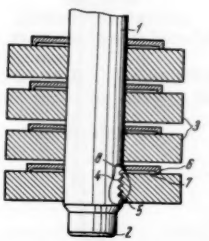
baked compacted soil and asphaltic cement pavements. The anchor and standard of this invention includes a gravity-actuated driving pin, movably retained within a standard adapted to cooperate with a pole, picket, or other element of the structure to be erected and means for positioning and stabilizing the anchor with respect to the surface of the soil or ground.

3,823,786

IMPACT BODY OF A HAMMER

Bogdan Vyacheslavovich Voitsekhovsky, ulitsa Akademicheskaya, 2; Valentin Pavlovich Nikolaev, ulitsa Maltseva, 1, kv. 8, and Grigory Yankelevich Shoikhet, ulitsa Pravdy, 1, kv. 34, all of Novosibirsk, U.S.S.R.

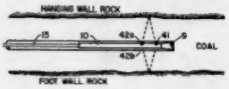
Filed May 15, 1973, Ser. No. 360,477
Int. Cl. B25d *1/00*
U.S. Cl. 173—126 **1 Claim**



The impact body of a hammer comprises a massive central rod adapted to deliver impacts in operation. The rod has threadedly received thereabout a plurality of weight-adding disc weights, each disc weight being associated with a resilient lock nut positioned behind this disc weight in the direction of the propagation of a compression wave caused by an impact.

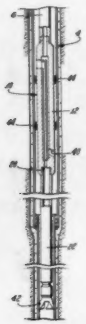
The lock nut engages the respective one of the disc weights only by the peripheral portion of this lock nut, there being left a gap between the rest of the nut and the disc weight. The lock nut is employed to take up play in the threaded connection between the rod and the disc weight. The impact wave branches off into each of the disc weights and gradually attenuates.

3,823,787
DRILL HOLE GUIDANCE SYSTEM
Gordon R. Haworth; Tibor O. Edmond, both of Ponca City, Okla., and William N. Poundstone, Pittsburgh, Pa., assignors to Continental Oil Company, Ponca City, Okla.
Filed Apr. 21, 1972, Ser. No. 246,297
Int. Cl. E21b 7/10
U.S. Cl. 175—24 **3 Claims**



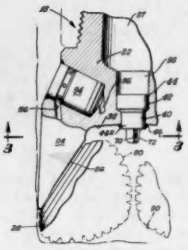
An apparatus for directing the drilling of a bore hole through a mineral vein which includes a drilling apparatus which has means for changing its direction near the bit, a guidance system mounted near the bit which includes a radiation source, a radiation detector and electrical and mechanical apparatus operated in accordance with the detected signal and connected to the direction changing apparatus to cause the drill to bore a hole in a prescribed manner. The bore hole drill is capable of following precisely between the top and the bottom of a coal seam or at the prescribed distance from the top or the bottom of a coal seam.

3,823,788
REVERSE CIRCULATING SUB FOR FLUID FLOW SYSTEMS
Erskine P. Garrison, Long Beach, and John E. Tschirky, Manhattan Beach, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.
Filed Apr. 2, 1973, Ser. No. 346,739
Int. Cl. E21b 3/08, 21/00, 33/126
U.S. Cl. 175—94 **9 Claims**



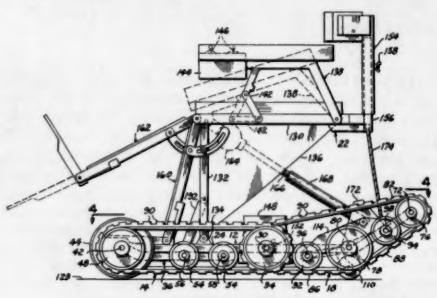
A reverse circulating device which supplies flowing carrier fluids and returns flowing fluids through a fluid conduit or string to efficiently and speedily remove the carrier fluids by providing a return conduit of less cross sectional flow area than that of the conduit or string through which the fluid is supplied. Also, and more specifically, a reverse circulating device which is connected to an inhole fluid motor so that carrier fluid can be supplied between the casing or the wall of the hole and the conduit or string and returned in the restricted fluid conduit.

3,823,789
DRILL BIT CENTER JET
Lloyd L. Garner, Los Alamitos, Calif., assignor to Smith International, Inc., Newport Beach, Calif.
Filed May 18, 1973, Ser. No. 361,479
Int. Cl. E21b 9/08
U.S. Cl. 175—340 **13 Claims**



A drill bit construction including a center jet for preventing the accumulation of masses of earth formation between and above the cutters, the jet being provided by a nozzle which breaks up or diffuses the stream of pressurized drilling mud issuing therefrom to avoid abrasive concentration of the jet on portions of the teeth of the cutters. In addition, a jet nozzle construction and mounting arrangement permitting installation and replacement of nozzles downwardly through the drilling mud passage in the body of the bit, there being means provided for reducing turbulence where it is not desired, while at the same time providing controlled diffusion or breaking up of the stream and also means for protecting the bit body adjacent the nozzle against undue abrasive action.

3,823,790
POWER-OPERATED WHEEL CHAIR
Eugene M. Richison, and Ethel M. Richison, both of Kinta, Okla., assignors to Thomas Conklin, Stigler, Okla.
Filed Feb. 12, 1973, Ser. No. 331,908
Int. Cl. B62d 55/04; B62b 9/02
U.S. Cl. 180—6.7 **5 Claims**



A power-operated wheelchair including selectively operated pairs of traction belt means driven by stub axles arranged on a central horizontal axis extending transversely of the chair with a forward pair of the traction belt means normally disposed horizontally and a rearward pair of the traction belt means normally disposed in a horizontal and rearwardly upward inclined plane. The wheelchair is normally supported on a horizontal surface by a pair of forward wheels and a rearward caster-type wheel. Control means, including gear trains and motors, drives the traction belt means and positions the

plane of the pivotally mounted wheelchair seat in a substantially horizontal plane when the wheelchair is ascending or descending a flight of stairs, or the like, while simultaneously retracting the caster wheel to a position above the depending horizontal plane of the rearward pair of traction belt means.

3,823,791

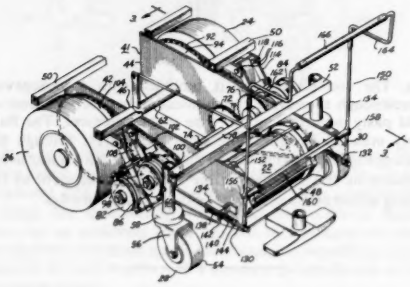
STEERING AND DRIVE MECHANISM FOR FLOOR CLEANING MACHINE

Milo W. Sheler, Elkhart, Ind., assignor to Keltec Inc., Elkhart, Ind.

Filed Oct. 25, 1972, Ser. No. 300,514

Int. Cl. B62d *11/08*

U.S. Cl. 180—6.66 **10 Claims**



A floor cleaning and scrubbing machine in which two main drive wheels located near the front of the machine are driven individually by a motor connected thereto by separate drives, each drive having a forward and reverse clutch therein. A steering mechanism controls the operation of the four clutches to operate one of the two clutches to steer the machine and includes a transversely positioned horizontal handle movable forwardly or rearwardly to drive the machine forwardly or rearwardly, and rotatable on a vertical axis to turn the machine in the right and left directions.

3,823,792

VEHICLE WITH STEPLESS DRIVE AND AUXILIARY BRAKING FORCE

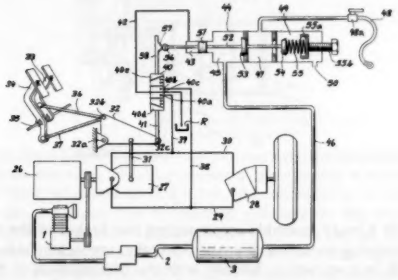
Walter Dinkloh, Obernau, and Wilhelm Spennemann, Aschaffenburg, both of Germany, assignors to Linde Aktiengesellschaft, Weisbaden, Germany

Filed Aug. 3, 1972, Ser. No. 277,679

Claims priority, application Germany, Aug. 6, 1971, 2139584

Int. Cl. B60t *7/20*

U.S. Cl. 180—82 **13 Claims**



A vehicle having a stepless drive, e.g., a hydrostatic transmission, between the engine and the vehicle wheels is provided with brake means in addition to the transmission for braking the vehicle or a trailer drawn thereby. The actuating device for the auxiliary braking force is connected to the hydrostatic transmission and is effective when the latter is in a braking condition to operate the auxiliary brake.

3,823,793

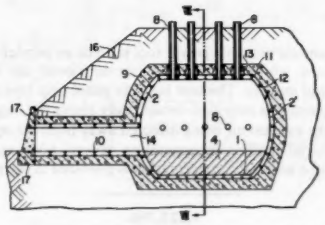
SEMI-SEALED SILENCER STRUCTURE

Kazumoto Yamamoto, Saga-ken, Japan, assignor to Asahi Kasei Kogyo Kabushki Kaisha, Osaka, Japan

Filed Oct. 2, 1972, Ser. No. 294,159

Int. Cl. F01n *1/02*

U.S. Cl. 181—33 R **2 Claims**



A drum which receives explosion impulse waves directly on the inner surface thereof is made of steel, and a material inlet tunnel and pipes for alleviating the explosion impulse and reducing the explosion noise are connected to said drum, and further the resultant structure is covered exteriorly with soil or concrete, whereby a semi-sealed silencer structure is provided which has substantially improved pressure-resistance and in which several tens to several hundreds kilograms of explosive can be exploded without causing dangers and public nuisances.

3,823,794

ACOUSTICAL PANELS

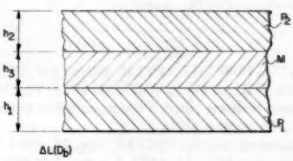
Michel Bre, Paris, France, assignor to Saint-Gobian Industries, Neuilly-sur-Seine, France

Filed Nov. 24, 1972, Ser. No. 309,022

Claims priority, application France, Nov. 25, 1971, 71.42222

Int. Cl. E04b *1/84*

U.S. Cl. 181—33 G **13 Claims**



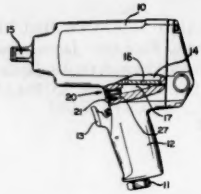
Transparent, translucent and opaque laminates are made from outer layers of vitreous material such as glass and ceramics and an interlayer of optical quality plastic. Many modifications are possible. The products are light, have a density near 1 and are very strong.

3,823,795

AIR TOOL MUFFLER

Donald Earl Fleigle, Abingdon, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed May 30, 1973, Ser. No. 365,199
Int. Cl. F01n 3/06
U.S. Cl. 181—36 A 9 Claims



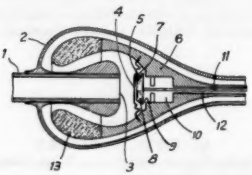
A pneumatic portable power tool such as an impact wrench is disclosed which incorporates an improved air exhaust passage and muffler. The tool is of the pistol-grip type and the exhaust passage is provided immediately above the trigger and handle, the exhaust air being directed away from the operator. An improved muffler incorporating several noise-reduction features in a simplified construction is provided in the passage.

3,823,796

MUFFLERS FOR INTERNAL COMBUSTION ENGINES

Paul Damiron, 10 Place des Etats-Unis, 75016 Paris, France

Filed Aug. 8, 1973, Ser. No. 386,692
Claims priority, application France, Aug. 17, 1972, 72.29485
Int. Cl. F01n 1/08
U.S. Cl. 181—49 7 Claims



This invention relates to mufflers for internal combustion engines of all kinds.

The invention provides means to break up the plane sound waves formed in the conduit between the engine and the muffler so as to absorb these waves wholly or in part near the point where the gas inlet conduit leads into the muffler. A vibratory diaphragm and a resonant cavity play important parts in arrangements according to the invention.

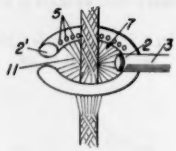
3,823,797

APPARATUS FOR THE APPLICATION OF A FLUID PASTY MATERIAL ON A WIRE SHAPED ELEMENT

Jean Ducatillon, Willems Nord, France, assignor to Cato Oil & Grease Co., Oklahoma, Okla.

Continuation of Ser. No. 174,615, Aug. 25, 1971. This application Mar. 21, 1973, Ser. No. 343,896
Int. Cl. F16n 7/00
U.S. Cl. 184—16 3 Claims

An apparatus for the application of a fluid pasty material on a wire shaped element and more particularly, but not exclusively for the lubrication of cables. Broadly, the apparatus comprises a solid ring shaped member having an inner and outer periphery. A network of closely spaced bristles are arranged about the inner periphery of the ring shaped member. The bristles extend radially inward and downward to form a funnel shape adapted to engagingly encompass the periphery of the wire shaped element. The apparatus also includes a conduit portion located above the network of closely spaced bristles. The conduit portion is provided with a passageway therethrough to provide communication between a source of fluid pasty material and the wire shaped element. The fluid pasty material is deliverable from the source, through the passageway and into the funnel shaped portion for uniform application on the periphery of the wire shaped element by the wiping action of the network of closely spaced bristles.

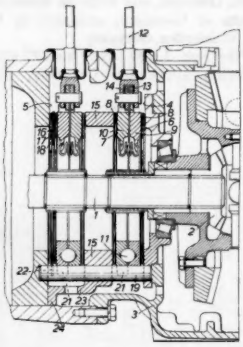


3,823,798

PLURAL SELF-ENERGIZING SPREADING DISC BRAKE ASSEMBLY

Piotr Ostrowski, Sutton Coldfield, England, assignor to Girling Limited, Birmingham, England

Filed June 30, 1972, Ser. No. 267,991
Claims priority, application Great Britain, July 3, 1971, 31262/71
Int. Cl. F16d 55/04
U.S. Cl. 188—71.4 3 Claims



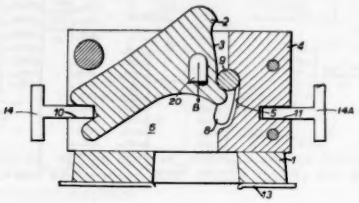
In a brake assembly incorporating two brakes of the self-energising spreading disc type the brakes are located side-by-side in a stationary housing with the friction discs of both brakes on a common shaft, and the torque on the pressure plates of both brakes is taken by a common pin mounted in the housing with its axis parallel to that of the shaft.

3,823,799

CROSS-PULL BRAKE ACTUATOR

Hugh Grenville Margetts, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Apr. 24, 1972, Ser. No. 246,592
Claims priority, application Great Britain, Apr. 27, 1971, 11624/71; Aug. 23, 1971, 39445/71
Int. Cl. F16d 51/22
U.S. Cl. 188—78 9 Claims



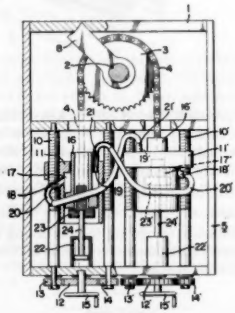
In a cross-pull mechanical actuator for an internal shoe drum brake, an input member and a reaction member for engagement with respective, opposed brake shoes interengaged through the intermediary of a cam and follower means whereby an actuating force applied to the input member parallel with the drum axis is translated into separating movement of the said members in a direction perpendicular to the actuating force.

3,823,800

BUFFER DEVICE USED FOR INDUSTRIAL ROBOT MACHINE

Hisao Fujiwara, and Kentaro Sakamoto, both of Yokohama, Japan, assignors to Kabushiki Kaisha Keiaisha Seisakusho, Yokohama-shi, Kawagawa-ken, Japan

Filed Dec. 26, 1972, Ser. No. 318,275
Claims priority, application Japan, Dec. 27, 1971, 46-105273
Int. Cl. F16f 9/28
U.S. Cl. 188—303 4 Claims



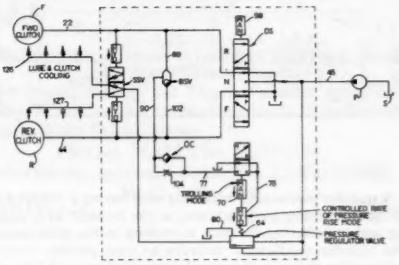
This invention relates to a buffer device used for an industrial robot machine, which comprises a chain which is wound onto the rotational shaft of a robot, and connected at its ends with the two piston rods of hydraulic cylinders via stop members provided at ends of said piston rods which engage with the pistons slidable in the two buffer cylinders. The airtight chambers which are formed in said cylinders are connected to each other by means of two tubes having sliding valves operable in opposite directions, said valves adapted to open and close said airtight chambers by the pistons, whereby the movement rate of the pistons may be restricted for buffering according to the change in flow quantity of the oil which flows in and out, due to the change of spaces of the openings when opening and closing.

3,823,801

CLUTCHES WITH A FLUID AND CAM OPERATED PRESSURE MODULATING VALVE

Bruce C. Arnold, Racine, Wis., assignor to Twin Discs Incorporated, Racine, Wis.

Filed Sept. 7, 1973, Ser. No. 395,200
Int. Cl. F16d 25/10, 13/72
U.S. Cl. 192—87.19 5 Claims



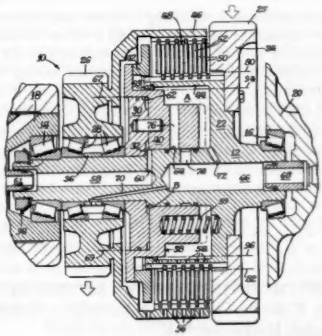
A clutch engaging and trolling valve for a marine gear transmission which transmission has both a forward and reverse clutch. The control valve permits trolling of the vessel in either the forward or reverse directions and also insures smooth and shock-free engagement of either the forward or reverse clutch. A single operating lever controlls both the clutch engaging "controlled rate of pressure rise" mode and the trolling mode.

3,823,802

CLUTCH WITH CONTROLLED COOLANT FLOW

James E. Winzeler, and William M. McClure, both of East Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

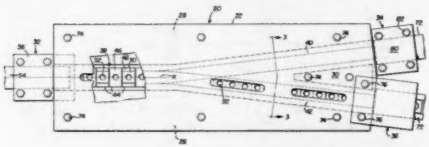
Filed Aug. 18, 1972, Ser. No. 281,913
Int. Cl. F16d 13/72
U.S. Cl. 192—113 B 5 Claims



A rotating clutch having a plurality of friction plates includes a plate cooling and lubrication system which maximizes supply of the coolant fluid thereto upon engagement of the clutch. Such maximized supply aids in the release of the clutch

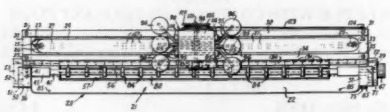
by utilization of the pressure of such supply of fluid in the clutch, and also by utilization of the centrifugal pressure head of such supply of fluid within the clutch.

3,823,803
NUT TRANSFER AND ORIENTING DEVICE
Arnold I. Lubin, Southfield, Mich., assignor to Multifastener Corporation, Detroit, Mich.
Filed Dec. 26, 1972, Ser. No. 317,963
Int. Cl. B65g *11/20, 11/16*
U.S. Cl. 193—43 A **6 Claims**



A transfer mechanism receiving nuts having a reduced pilot portion extending perpendicular to the transfer axis, separating and transferring the nuts according to the pilot position. The transfer mechanism includes an inlet passage receiving and guiding the nuts in two pilot orientations and two outlet passages each configured to receive and transfer the nuts in only one pilot orientation, in a continuous flow.

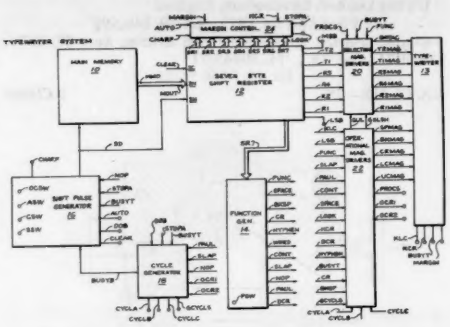
3,823,804
BRAILLE TYPEWRITER
Robert C. Lokey, Box 75356, Tamal, Calif. 94964
Filed Nov. 5, 1969, Ser. No. 874,220
Int. Cl. B41j *3/32*
U.S. Cl. 197—6.1 **10 Claims**



A braille typewriter comprising a frame and a removable and linearly adjustable die plate having a series of sets of six protuberances or points thereon corresponding to all of the units of a braille cell, and a movable carriage having six keys each corresponding to a particular one of the six units of a braille cell, each actuating a lever having an indentation in its end whereby depression of one or more keys will emboss the specific unit or units of a braille cell for a specific letter on a sheet of paper passed between the platen and the keys. The device includes a spring biased carriage advancing mechanism and ratchet and pawl means for releasing the carriage for movement upon the completion of the printing operation.

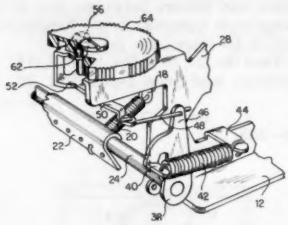
3,823,805
TYPEWRITER CONTROLLED BY A RECORD MEDIUM
Edward M. Richards, Commack, N.Y., assignor to Redactron Corporation, Hauppauge, N.Y.
Filed Nov. 23, 1971, Ser. No. 201,403
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 **18 Claims**

Connected to a typewriter controllable by coded combinations of signals is a source of the combinations to control the operation of the typewriter. In addition to the usual graphic printing instructions, signals are generated to automatically vary the line advances following each carrier return, further signals are generated to control automatically the occurrences



of the carrier returns, while still further signals control the automatic underlining or overprinting of graphics, i.e. characters, numerics and symbols.

3,823,806
COUNTERBALANCE TOUCH CONTROL
Herrick R. Diamond, Homer, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Jan. 8, 1973, Ser. No. 321,611
Int. Cl. B41j *7/26*
U.S. Cl. 197—33 **7 Claims**

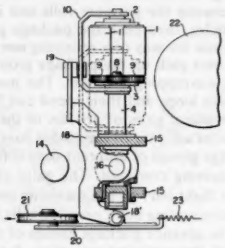


The key depression touch of a key-actuated business machine is controlled by adjusting the position of a spring bail which simultaneously controls the tension of all the key lever springs. A manually positioned control member with attendant linkages positions the spring bail and simultaneously adjusts the tension of counterbalancing spring means to minimize the unbalanced spring forces acting on the spring bail and the entire touch control system at all touch settings of the touch control apparatus.

3,823,807
ROTARY PRINT WHEEL MECHANISM WITH HAMMERING BRACKET
Takami Suzuki, Fujisawa, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan
Filed Apr. 27, 1973, Ser. No. 355,062
Claims priority, application Japan, Apr. 28, 1972, 47-043165
Int. Cl. B41j *1/32*
U.S. Cl. 197—55 **3 Claims**

A type wheel or wheels are rotably mounted between the upper and lower arms of a yoke-shaped member which in turn is drivingly coupled to a rotary shaft for rotating about the axis

thereof the type wheel or wheels, and the upper end of a hammering bracket is slidably fitted over the yoke-shaped member



so that the striking force or impact is applied through the upper end to the rotary shaft thereby causing the latter to rotate toward the platen.

3,823,808

TAPE CARTRIDGE PROVIDED WITH A DISPLAY PORTION

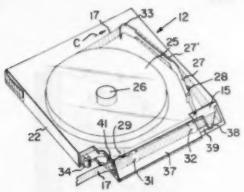
Minoru Murata, Yokohama; Tatsuo Nishikawa, Tachikawa, and Takayoshi Hanagata, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1971, Ser. No. 132,057

Claims priority, application Japan, Apr. 13, 1970, 45-31840; Apr. 13, 1970, 45-31844

Int. Cl. B41j *15/00*

U.S. Cl. 197—133 R **13 Claims**



A tape cartridge containing therein a printing tape for use with a compact electronic computer. The tape may readily be set with respect to the computer body, and printing may be effected on the tape at an exposed portion of the cartridge by the printing device of the computer and information so printed on the tape may be viewed through a viewing window provided in the computer as the tape moves through a viewing section formed in the cartridge. The lock means is provided in the cartridge for cooperating with retaining rollers in the computer to positively and removably fix the cartridge when inserted in the computer body, a resilient member being provided in the cartridge for accomplishing smooth movement of the printing tape.

3,823,809

ARTICLE TRANSFER

Marcel Henry, Les Chenes-Ermont, and Andre Malatray, Bois-D'Arcy, both of France, assignors to Colgate-Palmolive Company, New York, N.Y.

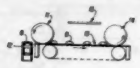
Filed Jan. 6, 1972, Ser. No. 215,773

Claims priority, application France, Jan. 6, 1971, 71.00213

Int. Cl. B65g *47/100*

U.S. Cl. 198—25 **18 Claims**

Apparatus for handling relatively soft articles such as freshly molded bars of soap effects transfer of the soap bars, as to a wrapping machine, by a system wherein each soap bar in turn is picked up by a suction device from an incoming conveyor and deposited in spaced relation on another conveyor, and another suction device picks up each spaced bar in turn



and delivers it to a wrapping station. During the entire transfer between the incoming conveyor and the wrapping station movement of each soap bar is accomplished without mechanical gripping or sliding of the bar along guide surfaces.

3,823,810

DEVICES FOR HANDLING WORKPIECES BY MEANS OF CENTERLESS HOLDERS

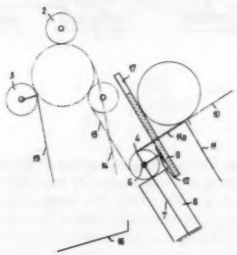
Gerard Druge, Annecy, and Claude Valentini, Billancourt, both of France, assignors to Societe Nouvelle De Roulements, Annecy (Haute Savoie), France

Filed Jan. 26, 1973, Ser. No. 326,781

Claims priority, application France, Feb. 2, 1972, 72.03463

Int. Cl. B65g *47/00*

U.S. Cl. 198—26 **8 Claims**



This device for feeding, loading and discharging workpieces by loading them rotatably and centerlessly utilizes peripheral holding members of which at least one is movable for performing the loading step and constitutes the lower support of the workpiece, mounted on a movable unit displaceable along an abutment acting as a ramp for lifting the workpieces from a reception position to a loading position; this movable unit acts at the same time as a ramp for lowering the workpieces between its holding members after clearing said feed ramp, the path along which said movable holding member is caused to travel diverging from the path along which the workpieces are discharged by gravity, in order to permit this discharge.

3,823,811

CONVEYOR MEANS FOR PAPER OR PLASTICS TUBE SECTIONS IN THE MANUFACTURE OF BAGS

Friedrich Franz Brockmuller, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Dec. 5, 1972, Ser. No. 312,354

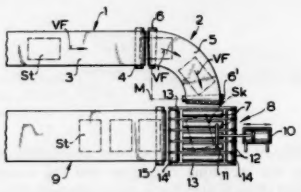
Claims priority, application Germany, Dec. 7, 1971, 2160709

Int. Cl. B65g *47/22*

U.S. Cl. 198—29 **4 Claims**

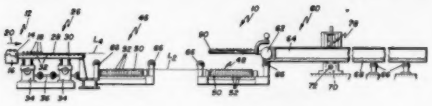
A mechanism for correcting errors in the positions of stacks of flattened paper or plastics tube sections travelling on a belt conveyor followed by a curved wire belt conveyor. The errors

caused by differences in the coefficients of friction between the stacks and the successive conveyors, are corrected by an



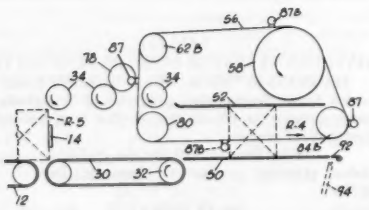
aligning mechanism in the form of at least one transverse slide positioned downstream of the curved conveyor.

3,823,812
MATERIAL HANDLING APPARATUS
Donald Sieurin, Northboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.
Filed Oct. 18, 1972, Ser. No. 300,733
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 AB **16 Claims**



An apparatus for handling elongated elements, for example bar products being delivered laterally from the delivery side of a cooling bed in a rolling mill. The apparatus includes a longitudinally extending assembly device for receiving and temporarily accumulating the elements at a first location. At least two longitudinally extending element conveyors are positioned at other locations spaced laterally from and parallel to the assembly device. A transfer mechanism is employed to carry groups of elements laterally from the assembly device onto one or the other of the conveyors.

3,823,813
ROLL FEED AND PACKAGE GROUP FORMING CONVEYOR
Ronald Holt, Battle Creek, Mich., assignor to Battle Creek Packaging Machines, Inc., Battle Creek, Mich.
Filed Feb. 9, 1973, Ser. No. 330,958
Int. Cl. B65g *37/00*
U.S. Cl. 198—76 **5 Claims**

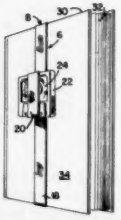


A parallel pair of supply belts deliver lines of articles (rolls) to retractable gates. Higher speed belts with top pressure rolls spaced above them separate pairs of articles from following articles on the supply belts and create gaps in the lines. Parallel vertical chain loops at each side of the lines have pusher bars extending therebetween and advance the bars downwardly between the pressure rolls and into the gaps in the lines of articles, then push the package group on to and transversely across the way of a receiving conveyor where incoming flights bars pick up the package group and feed it at right angles to a wrapping machine. The number of pusher bars on the chain loops and their speed can be varied to advance single or plural pairs of articles to the receiving way, and the distance of advance of the pusher bars can be adjusted to center package groups of different sizes in front of the flight bars on the receiving conveyor. The gates are synchronized with successive flight bars on the receiving conveyor, and the speeds of the accelerating belts, pressure rolls, and chain loops are adjustable to advance package groups of different lengths to the center of the receiving conveyor. A package guiding gate swings up behind package groups having plural pairs of articles as the group is delivered to the receiving conveyor.

ERRATUM

For Class 198—273 see:
Patent No. 3,823,815

3,823,814
APPARATUS FOR ATTACHING OBJECTS TO EACH OTHER
Albert K. W. Lum, 1711 Yamada Ln., Honolulu, Hawaii 96817
Filed Apr. 7, 1972, Ser. No. 242,029
Int. Cl. B65d *79/00, 63/10*
U.S. Cl. 206—225 **7 Claims**

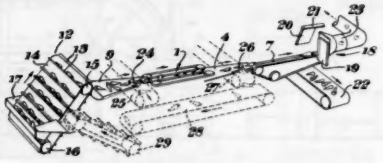


An elastic band defines a double loop for placement about a book, a book cover or the like and about a container for audiovisual material or the like used in conjunction with the book. The double loop is stitched together along a straight line for minimal band bulk between the book and the container to reduce the required storage space. The band has a sufficient width to both firmly hold the container and to orient it with respect to the book for a neat and orderly appearance.

3,823,815
APPARATUS FOR MARSHALLING ELONGATED ARTICLES
David Charles Bretten, and Peter Charles Chown, both of Bridge Works, St. Germans, Kings Lynn, Norfolk, England
Filed June 2, 1971, Ser. No. 149,298
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 R **2 Claims**

Marshalling apparatus for delivering, from a bulk supply, tapered vegetables and generally similarly shaped articles in single file with their larger ends leading includes a carrier comprising two elongated members diverging in the direction of delivery, and a lower retarder to engage the lower smaller

ends of the articles supported, with the larger ends uppermost, by and between the elongated members, to turn the articles into the required alignment. An elevator feeds the articles from a hopper to a multi-level multi-unit form of the apparatus, each unit comprising a vibratory tapered trough to marshal and feed the articles in single file to the carrier, and a similar trough may receive the articles from the carrier to present them to automatically actuated means for processing their larger ends.

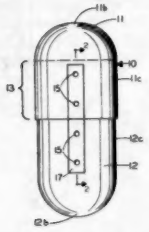


3,823,816

WATER-SOLUBLE PACKAGE

John Controulis, Grosse Pointe Farms; Kenneth N. Larsen, Southfield, and Larry M. Wheeler, Grosse Pointe Farms, all of Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed Feb. 3, 1972, Ser. No. 223,123
Int. Cl. A61k *9/04*
U.S. Cl. 206—.5 **6 Claims**



A water-soluble package is provided in the form of a hard shell capsule filled with powder, granules, or the like. The capsule shell is apertured, and the apertures or holes are covered over by a water-soluble barrier film which seals the holes and blocks any escape of the contents from the shell. The film is more water-soluble than the cap and body parts of the shell so that when the package is contacted with water, as in the digestive tract, the film rather than the shell dissolves first exposing the contents for dissolution and/or release by way of the apertures while the shell is still intact.

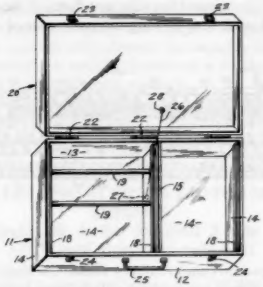
3,823,817

PAPER HANGER'S TOOL BOX

Charles R. Hughes, 4800 Jella Way, North Highland, Calif. 95660

Filed Nov. 15, 1972, Ser. No. 306,560
Int. Cl. B65d *57/00, 85/00;* **A45c** *11/00*
U.S. Cl. 206—349 **4 Claims**

A tool box consisting primarily of a tray and hinged lid portion with compartment means for a brush and tools, the compartments being covered by removable lid portions and the hinged cover of the tray includes a ruler for measuring and a tab for engagement with a hooked rod which will support the cover when the box is open.

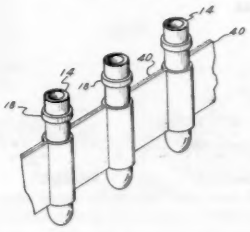


3,823,818

BELTED PREFORMS

Charles H. Shaw, Bloomfield, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 24, 1972, Ser. No. 220,218
Int. Cl. B65d *73/00, 85/20*
U.S. Cl. 206—390 **1 Claim**



Preforms used in blow molding plastic containers are sequentially affixed at spaced locations along a disposable web. As the preforms are affixed to the web, the composite is wound on a suitable storage reel which is housed in an enclosed shipping and storage container. Thereafter, the belted preforms may at any convenient time and place be fed to a finishing unit where they are removed from the web by any suitable means, such as by severing the web or by application of heat. Each preform is then fed to a blow molding station where the fabrication of the containers is completed.

3,823,819

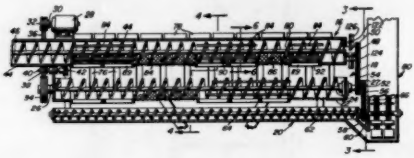
COMBINED HARVESTER, GRAIN AUGER AND CLEANER

Elmer L. Bakke, Box 87, Kensal, N. Dak. 58455

Filed Oct. 17, 1972, Ser. No. 298,244
Int. Cl. B07b *9/00*
U.S. Cl. 209—12 **12 Claims**

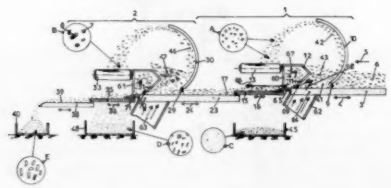
An inclined grain auger conveyor provided with first and second upper and lower vertically registered auger assemblies. Both of the auger assemblies include sections therein wherein the auger screw is provided with circumferentially spaced and longitudinally extending bars and the housing portion includes removable grate sections in lieu of the more conventional screening sections which generally extend substantially the full length of each auger conveyor outer housing. The forward

end of the auger conveyor is provided with an auger extension for disposition in a pile of grain and to convey grain to the lower end of the grain cleaning portion of the auger assembly. In order to mount the cylindrical bars on the auger screw portions of the auger assemblies adjacent flutes of the auger screw are provided with sets of longitudinally spaced and aligned



notches spaced circumferentially about the auger screw and the cylindrical bars are secured within these notches. In each section of each auger assembly where the cylindrical bars are used, the usual screen portions of the housing of the auger assembly are replaced by grates wherein the grain auger and cleaner may not only clean but also thresh the cut grain being handled by the auger and cleaner.

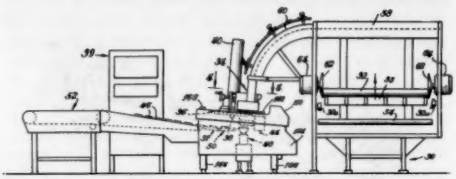
3,823,820
APPARATUS FOR SEPARATING COMMINUTED ELECTRICAL WIRE
Guy Sosson, Chemin du Grillon, Caluire (Rhone), France
Filed Apr. 26, 1972, Ser. No. 247,800
Int. Cl. B07b *9/00*
U.S. Cl. 209—44 **3 Claims**



A combination stratifier and sifter comprising at least one reciprocating porous table which delivers material to the sifter. A first deflector having a concave surface on its downstream side is arranged upstream and spaced above the table. A second V-shaped deflector arranged downstream of the first deflector forms part of a casing having an open side adjacent and spaced from the table. A blower directs air through the table and on both sides of the second deflector thereby blowing lights up the concave surface of the first deflector and setting up an eddy current within the casing. Air escapes from beneath the casing upstream and downstream to aid the separation.

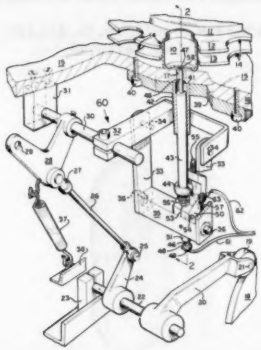
3,823,821
METHOD AND APPARATUS FOR PRODUCING WEIGHT CONTROLLED GROUPS OF SLICED FOOD PRODUCT
Gary Leonard Wallace, Oak Lawn, Ill., assignor to Chemetron Corporation, Chicago, Ill.
Filed Sept. 28, 1972, Ser. No. 293,146
Int. Cl. B07b *13/08*
U.S. Cl. 209—74 R **6 Claims**

A method and apparatus for producing weight controlled stacks of counted slices cut from an elongated mass of food product includes means for feeding the mass longitudinally along a downward feed path into a cutting path normal thereto, a rotary knife movable around the cutting path to cut slices from the mass, means below the cutting path for accumulating a selected number of the slices into a group, means positioned below the accumulating means for weighing a group of slices and producing a signal in response to the



weight thereof, means for removing the group from the weighing means after the signal is produced, means for varying the rotary speed of the knife around the cutting path according to the weight signal, and means for accepting or rejecting weighed groups in response to the weight signal.

3,823,822
PUSHUP GAUGE
Ronald Cochran, Roxana; August J. Federle, Godfrey, and Samuel W. Marsh, III, Alton, all of Ill., assignors to Owens-Illinois, Inc., Toledo, Ohio
Filed May 7, 1973, Ser. No. 357,685
Int. Cl. B07c
U.S. Cl. 209—80 **15 Claims**



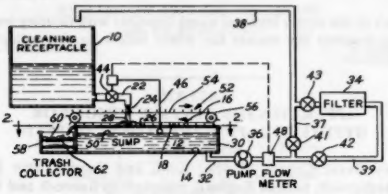
An inspection device for glass containers to check for bottom pushup height, more particularly, to check for those containers having a rejectably flat pushup or a rounded bottom and therefore unstable characteristics during handling and filling, the device being adaptable for incorporation into a multistation automatic container inspection apparatus. A probe shaft is positioned below the center of the container and mounted in an elevating apparatus to move the probe shaft upward into contact with the container. The design allows for relative downward movement between the probe and the elevating apparatus when the upward movement of the probe is restricted by the container before the elevating apparatus completes its upward travel. An open switch made of one contact point on the probe and a second on the elevating apparatus is set open a distance determined by the minimum allowable height of a container bottom pushup, and the level beyond that height to which the probe is set to travel, that distance then being the amount of allowable relative motion before the switch is closed. When the switch is closed, an electrical circuit is completed, activating an indicator device to signal that a defective container is in the device, or activating an automatic discharge mechanism to dispose of the container.

3,823,823

CLEANING SYSTEM AND METHOD

Henry J. Dokter, Lansing, and Robert P. Clark, Barrington, both of Ill., assignors to F. W. Means & Company, Chicago, Ill.

Filed Apr. 4, 1972, Ser. No. 240,980
Int. Cl. B01d 29/04
U.S. Cl. 210—79 36 Claims



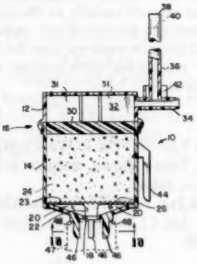
A cleaning system and method includes a screen for removing lint and other large solids from cleaning solvents. The dirty solvent is discharged from the cleaning receptacle at a location spaced from the screen and the lint and other solids accumulate upon the screen while the solvent passes through the screen where it is collected in a sump. At least a portion of the solvent in the sump is returned to the cleaning receptacle and control means controls the discharge rate of the solvent from the receptacle, either in response to the liquid level in the sump or to the flow rate of the liquid being returned to the receptacle, to maintain the solvent in the sump out of contact with the screen. Periodically the lint which has accumulated on the screen is scraped from the screen and discharged by way of a trash conveyor.

3,823,824

PORTABLE DRINKING WATER PURIFIER

Sam Close, R.R. No. 5, Lebanon, Ind. 46052

Filed Sept. 21, 1972, Ser. No. 291,006
Int. Cl. B01d 35/00
U.S. Cl. 210—86 14 Claims



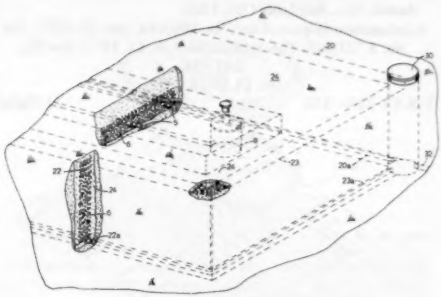
For use with an adjustable flow faucet including a delivery port and a manually adjustable control valve, a portable disposable water filter comprising a housing having an inlet end portion and an opposite discharge end portion, and a filtering medium disposed between the end portions and through which the water must pass in movement from the inlet end portion to the discharge end portion. The inlet end portion is formed to provide a space for receiving water to be filtered, and this space is connected to the faucet delivery port. A device for visually indicating when the water pressure in the said space is at a predetermined level corresponding to the desired flow rate through the filtering medium is provided. This visual indicating device preferably is proportioned and designed to exhaust excessive unfiltered water away from the space to reduce the water pressure in the space to the desired level and/or to maintain it at or below that level. In one embodiment of the invention, the space above the filtering medium is an open container into which the water to be filtered may be deposited. In another embodiment, the water is deposited in a collapsible container, and the container is collapsed to move the water through the filtering medium.

3,823,825

WATER TREATMENT FILTER BED FOR SEWAGE SYSTEMS

Joseph L. Bergles, Rt. 2, Box 385-3901 3 Mile Rd., Franksville, Wis. 53132, and Marvin A. Nelson, Rt. 1, Box 169, Union Grove, Wis. 53182

Filed June 15, 1973, Ser. No. 370,218
Int. Cl. E02b 11/00; B01d 23/16
U.S. Cl. 210—170 5 Claims



A trickle-type water treatment filter bed formed in the ground for receiving water of a sewage plant and which absorption bed has a drain wall around its sides and which functions to prevent saturation of the absorption bed. The drain wall means for the absorption bed finds particular utility in soils of poor permeability. The drain walls have tile means located at a depth lower than the tile means in the absorption bed and the drain walls function to prevent surface water from running into the absorption bed thereby contributing to its saturation, and also functions to drain off excessive water in the absorption bed so as to permit the absorption bed to function in a proper manner.

3,823,826

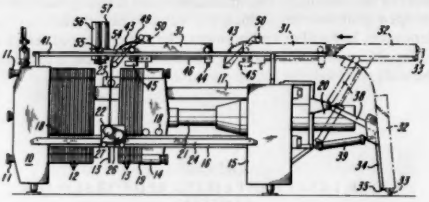
HORIZONTAL FILTER PRESS

Dieter Wieland, and Hans Becker, both of Bad Kreuznach, Germany, assignors to Seitz-Werke G.m.b.H., Bad Kreuznach, Germany

Filed Feb. 20, 1973, Ser. No. 333,765
Claims priority, application Germany, Feb. 21, 1972, 2207984
Int. Cl. B01d 33/00
U.S. Cl. 210—225 14 Claims

A horizontal filter press, which includes a device for separating the plates and which also includes a conveyor arrangement for conveying filter members into position to be supplied to opposite sides of the plates, with the conveyor arrangement including feeding and guiding means for withdrawing the filter members from the conveyor arrangement and for

guiding the filter members into position relative to the plates. Also carried by the conveyor arrangement is a cleaning device



operable for scraping the opposite sides of the filter plates and for supplying cleaning jets for cleaning the filter plates or the filter members thereon.

3,823,827

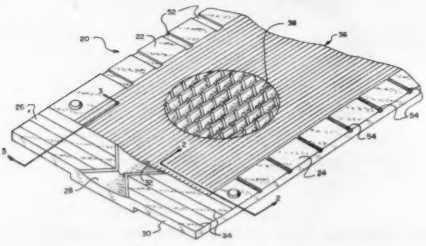
MEMBRANE SUPPORT SYSTEM

David L. Radford, Salt Lake City, Utah, assignor to Vital Assists, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 106,184, Jan. 13, 1971, Pat. No. 3,723,305. This application Apr. 11, 1972, Ser. No. 242,994

Int. Cl. B01d *31/00*

U.S. Cl. 210—238 **11 Claims**



An extracorporeal hemodialyzing system formed of a plurality of stacked plates defining a convoluted path for a tubular membrane. Each plate has a removably attached flexible veneer including an improved wedge support system formed of wedgeshaped support elements which are easily machine-tooled and which accommodate adequate membrane support with reduced masking. Dowels and mating recesses maintain the plates and connected veneers in proper alignment. The plates are assembled on a novel clamp assembly which evenly distributes a compressing force throughout the stacked plates such that a generally uniform pressure exists over the membrane path.

3,823,828

PROPELLING ARRANGEMENT FOR OIL AND GARBAGE SKIMMER CRAFT

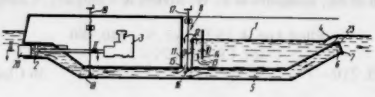
Abram Yakovlevich Derzhavets, prospekt Gagarina, 4, kv. 5; Petr Grigorievich Kogan, ulitsa Perekopskoi divizii 2, kv. 14; Vladimir Nikolaevich Semenov, ulitsa Varnenskaya, 19, korpus 8, kv. 29, and Viktor Iosifovich Tabachnikov, ulitsa Varnenskaya 19, korpus 8, kv. 31, all of Odessa, U.S.S.R.

Filed May 8, 1973, Ser. No. 358,360

Int. Cl. B01d *35/02*

U.S. Cl. 210—242 **5 Claims**

A propelling arrangement for self-propelled oil and garbage skimmer craft having a collecting receptacle, comprises a water jet and a duct for taking in water and delivering it to the water jet. The intake hole of the duct is located below the means for water inflow to the collecting receptacle of the skimmer craft, due to which a water stream entering the duct



draws in the upper layer of water together with floating impurities towards the means for water inflow to the collecting receptacle.

3,823,829

APPARATUS FOR REVERSE OSMOSIS OR HYPERFILTRATION TREATMENT OF FEED SOLUTIONS

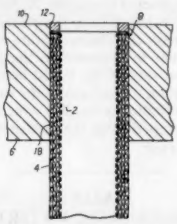
Barry David George Mantle, Kent, and Samuel Alan Hill, Motherwell, both of England, assignors to Babcock and Wilcox Limited, London, England

Filed May 16, 1973, Ser. No. 360,924

Claims priority, application Great Britain, May 18, 1972, 23440/72

Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **10 Claims**



Tubular membranes used in apparatus for reverse osmosis or hyperfiltration treatment of feed solutions, comprising a tubular semi-permeable membrane and a coaxial porous support tube, have improved end seals in which the support tube is provided with resilient end portions, a portion of the membrane at each end extends radially of the end face of the corresponding resilient end portion of the support tube and sealing means, e.g., O-rings or washers, urge the radially extending portions of the membrane into sealing contact with the resilient end portions.

3,823,830

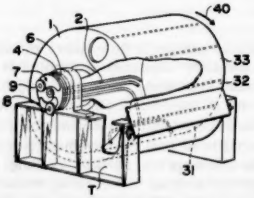
MAIN VALVE FOR ROTARY FILTERS

Yukio Hayafune, Tokyo, Japan, assignor to Tsukishima Kikai Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1973, Ser. No. 326,574

Int. Cl. B01d *33/00, 33/06*

U.S. Cl. 210—330 **1 Claim**



A main valve having an exhaust port for filtrate and another exhaust port for gases, each being provided with an exchange-

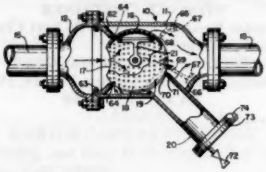
able baffle plate covered with wear resisting material. Mounted between the main valve and the wear plate is a main plate having an annular groove, in which the first and the second bridge blocks are fitted.

3,823,831

STRAINER DEVICE FOR LIQUIDS

Henry P. LeBlanc, Jr., 1201 Transcontinental Dr., Jefferson Parish, La. 70001

Filed Nov. 19, 1971, Ser. No. 200,495
Int. Cl. B01d 35/02
U.S. Cl. 210—408 8 Claims



The present invention is concerned with an improved straining device for separating solid materials from a fluid stream. More specifically, the present invention relates to an in-line strainer or filter for removing solid material from a fluid stream without interrupting the fluid flow and during which operation the strainer element can be back flushed without blowing the system down. The present strainer device basically comprises a ball shaped strainer element rotatably mounted within a strainer body, the strainer element being provided with an inlet into which the debris containing fluid is directed whereby the debris is continuously collected within the ball shaped strainer element. Screen closure means are provided within the strainer element whereby its inlet can be closed off to retaincthe debris within the strainer element which is back flushed by rotation thereof during which time the fluid stream is continued to be strained. Clean out means are provided in conjunction with the ball shaped strainer element whereby the debris therein can be collected in a sump reservoir without blowing the system down, after which the ball shaped strainer element is returned to its normal straining position.

3,823,832

PORTABLE POLE

Roy L. Cobb, 716 Bennington, Kansas City, Mo. 64125

Filed Dec. 4, 1972, Ser. No. 311,687
Int. Cl. D06f 53/00
U.S. Cl. 211—119.01 7 Claims

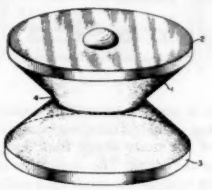
A portable pole for use as a line support and the like, includes an elongated generally upright standard adapted to have a lower end portion thereof supported on or extending into a support surface and a cross member mounted on the standard adjacent the lower end portion and engageable with the support surface and a pair of inclined lateral brace members, each extending between and connected to the standard and to a respective opposite end of the cross member. A brace structure has an upper end portion pivotally mounted on the standard at a position above the lateral brace members and has a lower end portion engageable with the support surface at a location spaced from the cross member and a connector mounted on the standard adjacent the upper end thereof for receiving and supporting an elongated line extending from the standard in a direction substantially normal to the cross member.

3,823,833

POLYUREAURETHANE SHOCK ABSORBING UNIT

Daniel A. Chung, North Canton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 8, 1973, Ser. No. 386,688
Int. Cl. B61g 9/10
U.S. Cl. 213—40 R 12 Claims



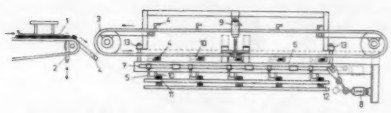
A polyureaurethane shock absorbing unit prepared from an adjusted and balanced mixture of specific diamines, di-isocyanates and a manipulative determined molecular weight balance of predetermined polyether polyols and polyester polyols. The unique shock absorbing unit is characterized by withstanding at least 300 cycles of a cyclic shock endurance test when of the prescribed configuration.

3,823,834

METHOD AND DEVICE FOR PERFORMING THE INSERTION OF PILING STRIPS IN TIMBER PACKAGES

Alpo Rysti, Frisansintie 22, 02240 Frisans, Finland

Filed Nov. 3, 1971, Ser. No. 195,176
Int. Cl. B65g 57/06
U.S. Cl. 214—6 DK 4 Claims



A device used for inserting piling strips into a timber package includes a conveyor, supporting hooks carried by the conveyor and carrying the strips, a vertically movable frame, spaced fetching hooks and means moving the fetching hooks laterally with reference to the frame, whereby the strips move upon the fetching hooks and then upon the timber package.

3,823,835
APPARATUS FOR TURNING OVER AND STACKING MESH MATS

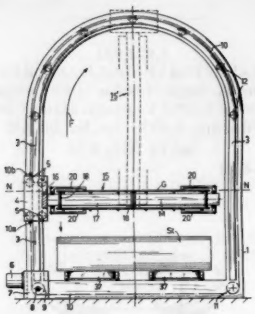
Hans Gott; Josef Ritter; Klaus Ritter, and Gerhard Ritter, all of Graz, Austria, assignors to Firma EVG Entwicklungs- u. Verwertungsgesellschaft m.b.H., Graz, Austria

Filed Aug. 1, 1973, Ser. No. 384,741

Claims priority, application Austria, Aug. 18, 1972, 7168/72

Int. Cl. B65g *67/06*

U.S. Cl. 214—6 DK **12 Claims**



The invention is concerned with an apparatus for stacking mesh mats leaving a mash production machine and for turning at least some of the mats about their longitudinal axis immediately above the stack. The apparatus comprises at least one gantry which bridges the mesh feed path and which forms an arcuate track for a carriage, an arm which is rigidly connected to the carriage and has two opposite supporting surfaces for mesh mats which, when the carriage is on one of the upright side portions of its track extends across the gantry opening, and releasable guide and holding devices provided on each supporting surface of the arm to guide a mesh mat while it is being fed onto the arm and to hold it temporarily until it is stacked with or without a turning operation.

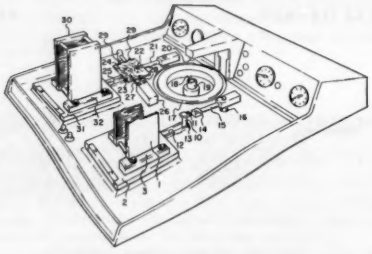
3,823,836
VACUUM APPARATUS FOR HANDLING SHEETS

Oliver F. Cheney, and Tamas Dobo, both of Philadelphia, Pa., assignors to Plat-General, Inc., Mt. Laurel, N.J.

Filed May 22, 1973, Ser. No. 362,671

Int. Cl. B65g *1/06*

U.S. Cl. 214—16.4 R **13 Claims**



An apparatus is provided for handling generally flat sheets such as discs or rectangles of fragile silicon. The apparatus includes a supply carrier with a plurality of ledges to hold the sheets and a withdrawing means of a vacuum chuck to lift and hold the sheets between the adjacent ledges, attached to an elevator to raise and lower the chuck, the level of which is indexed by a control to progressively higher ledge levels as the lower sheets are removed. A horizontal movement means is provided to bring the sheets clear of the supply carrier. In particular, the level control includes a spiral staircase the steps of which act as stops to hold the elevator at predetermined levels between the adjacent ledges so as to prevent the sheets from touching the carrier except when they are gently raised off of or lowered onto the ledges.

3,823,837
DEVICE FOR DISCHARGING BULK MASSES FROM A STORAGE CONTAINER

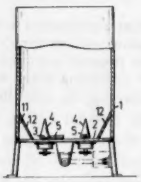
Olov Carl Gustav Wennberg, Champ du Vert Chasseur 16, B-1180 Brussels, Belgium

Filed Feb. 1, 1973, Ser. No. 328,603

Claims priority, application Sweden, Feb. 14, 1972, 1719/72

Int. Cl. B65g *65/48*

U.S. Cl. 214—17 D **5 Claims**



This invention relates to a device for discharging material, especially sticky material having a tendency to bridging from a storage container, especially a silo with a bottom of circular or rectangular shape having one or more flutes or openings through which the goods are discharged. The invention refers especially to discharging devices having scraper wings mounted on rotatable shafts and arranged to sweep circular surface portions or the surface of the bottom of the container. The invention consists in that a plurality of shafts with scraper wings are arranged so that the surface portions of the bottom swept by each wing have their peripheries passing very near each other, touching each other or intersecting each other, said peripheries passing either very near or touching the outer contour of the container bottom. The sweeping fields of the wings also extend to or over the edge of one or more discharge openings or discharge flutes in the bottom, said flutes containing feed members such as conveyor screws to feed the material falling or being swept down into the flute to a discharge end thereof. Filler bodies covering the non-swept surface portions of the bottom have guide surfaces inclined downwards and inwards from the container wall towards the bottom.

3,823,838
BALL RETRIEVER

August W. Gustafson, and Edna L. Gustafson, both of Pasadena Place, Corpus Christi, Tex. 78411

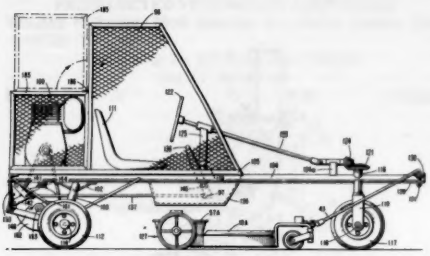
Filed Sept. 12, 1972, Ser. No. 288,263

Int. Cl. B60p *1/00*

U.S. Cl. 214—356 **8 Claims**

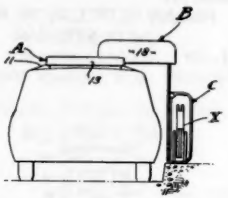
An apparatus for retrieving balls from the surface of a practice field has a means for diverting balls spread over the field to a pair of spaced rotating discs carrying elastomeric projections therebetween and adapted to pick up the balls and rotate them to an elevated position where they are discharged into a suitable container. The retriever is provided with an apparatus for propelling it over the ground having a motor elevated

above the drive wheels of the apparatus and connected to the drive wheels through sprocket and pulley wheels adapted to



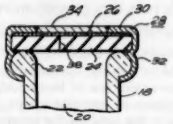
be engaged and disengaged by means of a toggle joint and a manually actuated lever accessible to the operator of the apparatus.

3,823,839
CARTOP CARRIER ELEVATOR
Robert C. Petzing, and Betty H. Petzing, both of 1013 3rd St., Los Angeles, Calif. 90403
Filed May 8, 1972, Ser. No. 251,379
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **12 Claims**



An elevator mechanism for moving a cartop carrier between a ground level loading position and a roof level riding position, and comprised of a rack mounted onto the car top, a cradle shiftable laterally upon the rack between said loading position and said riding position, a carrier transported by the relative movement of the cradle and rack between said ground level positioning and said riding positioning, and coordinated means shifting the cradle and moving the carrier between said positions; the combination providing an enclosure in the riding position and which is automatically opened at the ground level positioning, and all of which is power automated.

3,823,840
PREPUNCTURED CLOSURE
Eli A. Zackheim, Norwich, Conn., assignor to Jules Silver, Norwich, Conn.
Filed Aug. 4, 1972, Ser. No. 278,046
Int. Cl. B65d *51/00*
U.S. Cl. 215—37 R **5 Claims**



A closure is provided which consists of three parts and is particularly usable with a container of the type having an open top. The three components are (1) a flat elastomeric member closing the open top, (2) a flexible impermeable and tearable barrier layer, and (3) a cap overlying the barrier and the flat member to seal the combination to the container. An arcuate slit is provided in the flat member, the slit being substantially resealed by the elastomeric properties of the seal member. However, the slit permits the insertion therethrough of a plastic canula so that a dosage may be removed without substantial exposure of the contents of the container to contamination.

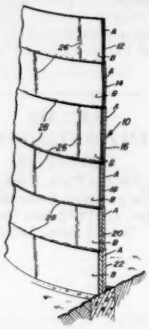
3,823,841
CLOSURE SYSTEM FOR STERILE MEDICAL LIQUID CONTAINER
Charles K. Lovejoy, Canoga Park, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Apr. 13, 1972, Ser. No. 243,687
Int. Cl. B65d *51/18*
U.S. Cl. 215—39 **26 Claims**

A closure system for a sterile medical liquid bottle that has a neck with external threads and an annular neck bead below these threads. This closure system includes an inner screw cap, an outer tear-off cap, and a rubber cup disposed between these two caps. The rubber cup is crimpingly held against the bottle neck bead in a bacteria-tight joint to protect the threaded area of the inner screw cap. In a procedure for opening the container to reduce chance of contamination, the outer closure is first torn off and crimping pressure relieved from the rubber cup, and then the cup is rotated to break loose the inner screw cap without completely removing it. Next, the rubber cup is vertically separated from the screw cap while the screw cap is still engaged with the bottle threads. After removal of the resilient cup the screw cap is easily unscrewed from the sterile threaded area.

3,823,842
DOUBLE PLY WELDED PLATE TANK WALL CONSTRUCTION
Chung-Wie Chang, No. 14, 1st Kuang Fu St., Taiwan, China
Filed Mar. 15, 1973, Ser. No. 341,761
Int. Cl. B65d *7/42*
U.S. Cl. 220—1 B **9 Claims**

A large volume steel plate liquid storage tank including inner and outer wall plies of plate steel. Each of the inner and

outer walls comprises a plurality of vertically stacked courses of wall plates and the thickness of the plates of the inner and



outer plies of the tank decreases as the elevation of the courses of plates increases.

3,823,843

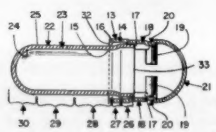
LOCKING CAPSULE

Matheson George Bernard Stephens, Plobsheim, and Robert Albert Wuest, Strasbourg, both of France, assignors to Eli/Lilly and Company, Indianapolis, Ind.

Filed Oct. 26, 1972, Ser. No. 301,045

Int. Cl. B65d *41/18*

U.S. Cl. 220—42 A **20 Claims**



A locking capsule is provided for packaging unit doses of physiologically active agents, said capsule having a body portion and a cap portion which are adapted to be telescopically joined together in a frictionally engaged pre-locking position prior to the filling thereof and to be fully telescopically joined together in a mechanically locked position when filled.

3,823,844

SMALL ARTICLE DISPENSER AND COUNTER

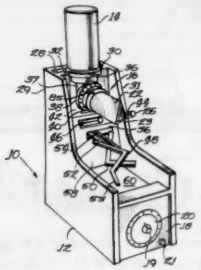
Bernard Linkemer, 535 N. Michigan Ave., Chicago, Ill. 60611; Larry Michelson, 2710 W. Summerdale, Chicago, Ill. 60625, and Glenn L. Beall, 1080 N. Ferndale, Gurnee, Ill. 60031

Continuation-in-part of Ser. No. 08,938, Feb. 5, 1970, abandoned. This application Mar. 15, 1972, Ser. No. 234,863

Int. Cl. G07f *11/00*

U.S. Cl. 221—13 **13 Claims**

A device for dispensing a predetermined number of small articles from a storage container, in which the small articles move in response to a vibrator through an adaptor unit in communication with the storage container; and, as the small articles leave the outlet of the adaptor unit, they are detected



by a counting mechanism which stops the vibrator after the predetermined number of small articles has been counted.

3,823,845

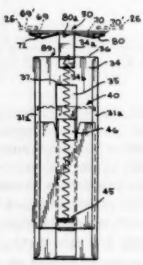
TOP LOADING ARTICLE DISPENSER

Ralph Beach Mott, Sr.; Ralph Beach Mott, Jr., and Richard C. Cantella, all of Houston, Tex., assignors to Reserv-A-Roll Co., Houston, Tex.

Filed July 18, 1973, Ser. No. 380,486

Int. Cl. A47k *10/44*

U.S. Cl. 221—59 **2 Claims**



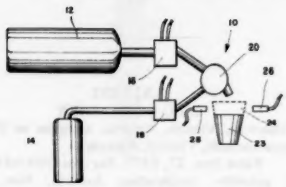
A top loading article dispenser including an open upper end container for receiving articles with support means in the container to receive and support the articles. The support means is spring loaded to urge the support means towards the top of the container and the top of the container is provided with cover means that are pivotally secured adjacent the top thereof so that the cover means may be pivotally moved to a position for access to the container from the top thereof for loading the container with articles. The cover means comprises a pair of members pivotally secured adjacent the top of the container whereby they may be moved to a position for access to the container and thereafter moved downwardly after the container has been loaded with articles to aid in retaining the articles in position in the container.

The pair of members are of less width than the open upper end of the container to provide a slot in the top of the container for access to the articles for removal from the container as desired. Spring means mounted on the container aid in retaining said pair of members in substantially a vertical position when loading articles into the container and for aiding in retaining the pair of members in a horizontal position.

3,823,846
MEANS FOR AUTOMATICALLY DISPENSING PRESELECTED VOLUMES OF A BEVERAGE

Timothy F. Probst, 2000 Jaquelyn Dr., North Canton, Ohio 44720

Filed Aug. 26, 1971, Ser. No. 175,078
Int. Cl. B67d *5/08*
U.S. Cl. 222—70 **5 Claims**

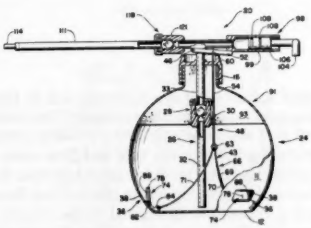


A control circuit for a beverage dispenser such as a soft drink dispenser. The closing of a push button actuates the dispensing solenoids and a time delay relay. The solenoids remain energized for a period of time determined by the relay and means are provided for selecting one of two time intervals to dispense either large or small drink. Counters are also provided to record the number of large and small drinks dispensed.

3,823,847
WATER CANNON

Paul C. Ware, 6880 Excelsior Blvd., Minneapolis, Minn. 55426

Filed May 21, 1973, Ser. No. 362,509
Int. Cl. A63h *33/00*
U.S. Cl. 222—79 **6 Claims**



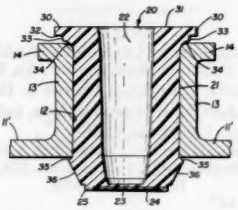
A water cannon for use on land or in the water. Water inlets may be opened to fill the container and closed so that the container may be moved from the water source for use. Construction of the apparatus is such that it will float when used in a water environment. The design of a compression cylinder, barrel and nozzle is such that maximum distance may be achieved with a droplet size that will not be injurious to those who use the apparatus.

3,823,848
SEALING PLUG FOR A CONTAINER

Martin E. Schuster, Northglenn, and Frederick J. LePenske, III, Golden, both of Colo., assignors to Adolph Coors Company, Golden, Colo.

Filed Aug. 29, 1972, Ser. No. 284,661
Int. Cl. B65d *83/00*
U.S. Cl. 222—82 **4 Claims**

A sealing plug for insertion in the tap hole of a container, comprising a cylindrical body having a uniform diameter portion, said body having means extending radially outwardly on its upper end for manual gripping for withdrawal of the plug from the hole and for preventing pushing of the plug from the hole into the container, and having means on its lower end for preventing ejection of the plug from the hole without hindering the insertion of the plug into the hole. The uniform diameter body of the plug fits snugly within and in sealing contact



with a collar defining the hole throughout its length while a curved annular surface located radially inwardly of the gripping means between the gripping means and the cylindrical body bears radially outwardly and also downwardly on the collar to enhance dependable sealing between plug and container.

3,823,849
VALVE FOR DELIVERING A LIQUID FROM AN AEROSOL CONTAINER

Tomaso Ruscitti, Milan, Italy, assignor to Coster Technologie Speciali S.p.A., Milan, Italy

Filed Mar. 6, 1972, Ser. No. 231,964
Claims priority, application Italy, Mar. 30, 1971, 22457/71
Int. Cl. B65d *35/28*
U.S. Cl. 222—96 **6 Claims**

A valve for delivering a liquid from an aerosol container, comprising a rigid body member seamed to a bottom attachable on a container mouth or inlet and having side and bottom walls defining a cavity, a first shutter which is accomodated and movable within the cavity of said rigid body member, a tubular element having one end projecting from the bottom on the opposite side to that from which said body member projects and its other end fast with said first shutter, a resilient sealing member between the rigid body member and the bottom and having a hole, in which said tubular element is forced and can move and swing, at least one passage between the inside of the tubular element and the cavity of the rigid body member adjacent to said first shutter, at least one free hole in said side wall of the rigid body member, at least one spring acting on the first shutter by pressing it against said sealing member to close said passage, a hole being provided in the bottom wall of the rigid body member, at which hole a hollow extension projects from the rigid body member, on which extension the inlet of a deformable bag can be superimposed, this bag containing said liquid and capable of being accomodated within said container, said valve being characterized in that an annular resilient strip can be superimposed to the outer surface of the side wall of said rigid body member,

this strip being forced on the side wall, superimposed to and sealing the hole in said wall, and in that at the bottom end of said first shutter means are provided for closing the hole in said bottom wall of the rigid body member under the conditions where said tubular element and first shutter are displaced against the action of said spring to press on said bottom wall.

3,823,850

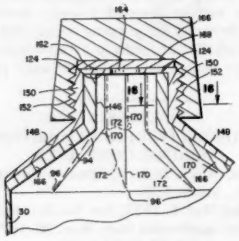
FOLDABLE TUBULAR PACKAGE

George Henry Holoubek; David Edward Ales; Harland Elmer Harms; Warren E. Erickson; Maurice A. Ditmars, and J. Keith Brookhart, all of Muscatine, Iowa, assignors to Dart Industries Inc., Los Angeles, Calif.

Continuation of Ser. No. 214,654, Jan. 3, 1972. This application July 5, 1973, Ser. No. 376,725

Int. Cl. B65d *35/08*

U.S. Cl. 222—107 **10 Claims**



A laminated settable tubular package is disclosed having integral end and body portions of the same material. The tubular package is formed with a process and apparatus which permits head and shoulder portions to be formed as a continuation of the tubular body through folding and shaping operations. The package is substantially impermeable and has particular use for containing toothpaste, essential perfumes, oils, solvents, flavorings, and other substances in which permeation of the atmosphere and/or volatization losses are problems.

3,823,851

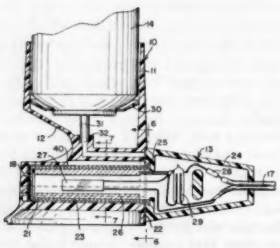
DEVICE FOR DISPENSING HEATED FLUENT PRODUCTS

Robert S. Waters, Lancaster, Pa., assignor to Schick Incorporated, Lancaster, Pa.

Filed May 10, 1973, Ser. No. 359,026

Int. Cl. B67d *5/62*

U.S. Cl. 222—146 HA **10 Claims**



A dispensing device for dispensing a heated fluent product from a container comprises a molded housing having a recess in which a removable heating probe is received. The product is heated prior to being discharged by means of a series of passageways which convey the product adjacent the heated probe. Improved heat transfer to the product and reduced manufacturing costs are obtained by forming the passageways from channels molded into the inside surface of the probe-receiving recess and a heat-conductive sleeve inserted into the recess between the probe and the inside surface. The sleeve may be made removable to enable access to the passageways for cleaning where the dispenser is to be used with multiple products. Furthermore, since the probe is removable and does not come in direct contact with the product, it may be conveniently used with other dispensing devices.

3,823,852

SILO CONTAINER

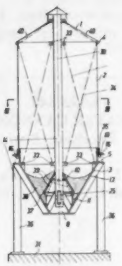
Johann Nikowitz, Vienna, Austria, assignor to Waagner-Biro Aktiengesellschaft, Vienna, Austria

Filed Nov. 27, 1972, Ser. No. 309,884

Claims priority, application Austria, Nov. 26, 1971, 10196/71

Int. Cl. E04h *7/22*

U.S. Cl. 222—185 **10 Claims**



A silo which has an outer silo container and an inner supporting framework supporting the container. The container is composed of roof and floor units and a foldable tubular side wall unit extending between the roof and floor units. Upper and lower connecting rings serve to connect the side wall at its upper and lower ends respectively to the roof and floor units. The supporting framework is situated in the interior of the container and includes a central supporting column which extends upwardly from the floor unit and carries the roof unit, the latter having a supporting structure which extends radially around the supporting column and which carries the upper connecting ring.

3,823,853

POCKET-SIZE DISPENSER

Paul Peter Alden, Rebberstrasse 57, CH-8049 Zurich, Switzerland

Filed Dec. 29, 1971, Ser. No. 213,549

Claims priority, application Switzerland, Jan. 29, 1971, 1409/71

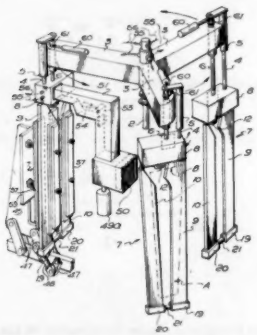
Int. Cl. G01f *11/18*

U.S. Cl. 222—361 **8 Claims**

A pocket-size dispenser for dispensing granular goods such as sweeteners of pharmaceuticals. The dispenser has the outer form of a ball point pen with a push-button at the rear end. By pressing the push-button a piston projects from a discharge opening and releases a small quantity of goods stored inside of

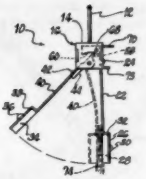
the dispenser. Refilling is effected by putting the front end of the dispenser into an aperture of a refill container, then turning the dispenser together with the refill container around and moving the piston in rearward direction to open the discharge opening preferably by turning the push-button.

3,823,854
TROUSER PRESSES
Nicholas Wynne Everett, Holme Via Carnforth, England, assignor to Ibis Engineers Limited, Kendal, England
Filed July 9, 1973, Ser. No. 377,304
Claims priority, application Great Britain, July 18, 1972, 33444/72
Int. Cl. D06c *5/00*
U.S. Cl. 223—73 **9 Claims**



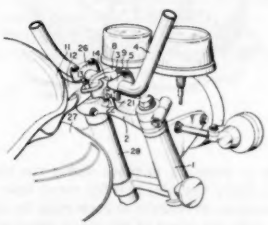
An industrial trouser press comprises a stationary frame housing a central shaft supporting main arms each of which carries a cylinder having a piston rod secured to a box supporting the relatively movable depending hollow arms of a pressing assembly on which the trouser legs of trousers are mounted to surround a perforated steam chest, and periodically the shaft is turned for moving each pressing assembly in turn into a relatively stationary pressing station in registry between pressing heads capable of substantially horizontal movement to contact the trouser carrying arms, and each pressing assembly is rocked through 90° whihe moving between a loading station and the pressing station and between the pressing station and an unloading station.

3,823,855
GARMENT HANGER
Hans M. Dohring, Gordon, Nebr. 69343
Filed Jan. 31, 1973, Ser. No. 328,419
Int. Cl. A47j *51/14*
U.S. Cl. 223—96 **4 Claims**



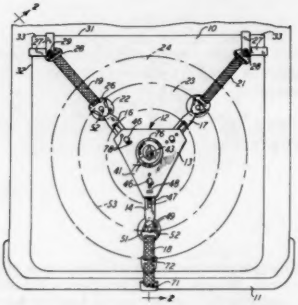
A garment hanger construction including a pair of jaws for holding a garment. At least one of the jaws is mounted on a pivoting arm, and a latch is employed for holding the pivoting arm in closed position relative to the other arm. The arm is formed of a resilient material such as spring metal, and the latch mechanism includes a plurality of latching positions so that the jaw mounted on the pivoting arm can be pressed against a garment and so that resilient pressure can be applied to the garment until the hanger is unlatched. The unlatching operation is accomplished through manually engageable means for providing a convenient hanger structure.

3,823,856
ACCESSORIAL DEVICE FOR HOLDING A HELMET OR THE LIKE ON AN AUTOBICYCLE
Masaaki Uchida, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 28, 1972, Ser. No. 292,913
Claims priority, application Japan, Sept. 30, 1971, 46-89554
Int. Cl. B62j *39/00*
U.S. Cl. 224—36 **3 Claims**



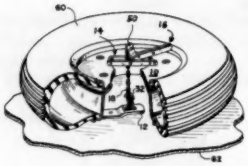
An accessorial device for holding a helmet or the like on an autobicycle is comprised of a handle setter for holding the handle of the autobicycle on the frame thereof, a hook-shaped cover member of which root portion is pivotally connected to the handle setter so as to cover at least part of the upper surface of the handle setter while the cover member holds a loop portion of the tie band of a helmet or the like at its hook-shaped portion in association with the upper surface of the handle setter, and a locking means for locking up said cover member against the handle setter, whereby the helmet or the like is certainly held on the autobicycle not to be stolen.

3,823,857
SPARE TIRE CARRIER
Carl F. Yandt, 703 Oak Ter., La Cresent, Minn. 55947
Filed Apr. 17, 1972, Ser. No. 244,610
Int. Cl. B62d 43/00
U.S. Cl. 224—42.24 7 Claims



A spare tire carrier for mounting onto an automobile and supporting an assembled tire and rim, including a plurality of radially extending arms having cushion supports underneath for supporting the carrier on the automobile. The arms are pivotally interconnected through a connector, and upstanding lugs engage the tire rim and align the rim on the carrier, and a threaded member holds the rim down onto the carrier. Straps extend from the arms and hooks are on the ends of the straps for hooking onto the trunk lid and onto the automobile bumper.

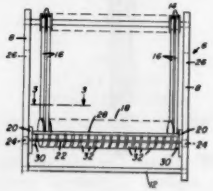
3,823,858
SPARE TIRE CLAMP
Herbert E. Schnakenberg, 315 S. Boswell, Crete, Nebr. 68333
Filed May 29, 1973, Ser. No. 364,631
Int. Cl. B62d 43/02, 43/08
U.S. Cl. 224—42.24 9 Claims



To clamp a spare tire in place within the trunk of an automobile, a clamp includes two flat metal base struts held in parallel spaced-apart relation to each other by tubular spacers and rivets, with the edges of the struts being adapted to rest against the top of the tire over its central opening. The bifurcated end of a handle formed from two flat metal stampings fastened together at one end and spread apart at the other is pivoted at a central point on the base struts to:

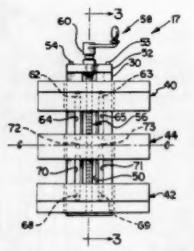
1. lift the upper end of an upstanding arm fastened between the stampings where the bifurcated sections come together when the handle is pivoted downwardly to tighten a chain connected between the end of the arm and a bracket beneath the tire; and
2. lower the arm when the handle is raised so as to loosen the chain. The clamp is sufficiently narrow to pass through the center of the tire when the tire is being removed or placed into the trunk.

3,823,859
HELICAL WEB PATH PROCESSING RACK
Robert I. Anderson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 16, 1973, Ser. No. 351,202
Int. Cl. B65h 17/42
U.S. Cl. 226—118 8 Claims



A helical web or film path processing rack for use in a processing device comprising a tray having a plurality of semi-cylindrical cavities arranged in parallel side-by-side relation. The tray is in vertical register with a shaft, and each cavity has planar sides lying in parallel planes transverse to a plane passing through the axis of the shaft and through the centers of the openings in the upper surface of the tray defining the cavities. The tray supports a plurality of film spools extending into the cavities.

3,823,860
WEB GUIDING APPARATUS
Jack I. Perry, Sylvania Township, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Apr. 2, 1973, Ser. No. 346,955
Int. Cl. B65h 23/32
U.S. Cl. 226—199 17 Claims



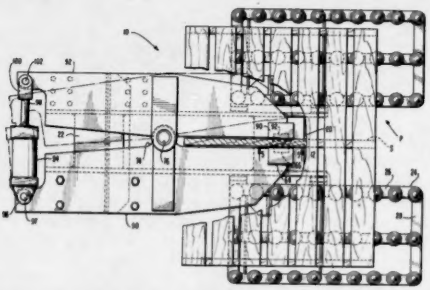
Apparatus for guiding webs of material in such a manner as to maintain a fixed center line regardless of the width of the web. A main carrier member is fixed to a base. The center line which must be maintained regardless of web width passes through the center of the vertical height of the main carrier. Upper and lower movable web guides are slidably mounted on the main carrier. An adjustment mechanism allows both the upper and lower web guides to be moved toward or away from the fixed center line simultaneously. This movement keeps both web guides the same distance away from the fixed center line to allow guiding of webs of differing widths. An alignment mechanism is used to initially set both web guides the same distance away from the fixed center line. This is then locked, thereby maintaining the equi-distance relationship even though the actual distance value is increased or decreased by operation of the adjustment mechanism.

3,823,861

REPAIR PRESS FOR PALLET STRINGERS

John Calvin Jureit, Coral Gables, and Benjamin Harry Kushner, Miami, both of Fla., assignors to Automated Building Components, Inc., Miami, Fla.

Filed Mar. 26, 1973, Ser. No. 344,642
Int. Cl. B27f 7/02
U.S. Cl. 227—153 10 Claims



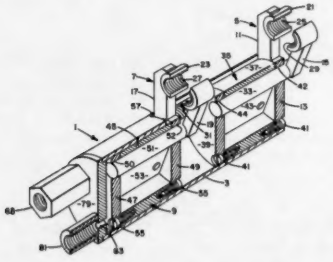
The press includes a support table comprised of a pair of outrigger assemblies carrying upstanding ballbearings. A pair of arms are carried by the press and at like ends mount press platens having magnets recessed in opposed platen faces for supporting reinforcing plates to be embedded into the sides of the damaged stringer portion undergoing repair. One of the arms is pivotally secured to the press at a location intermediate the ends of the arm. The opposite ends of the arms mount a hydraulic cylinder whereby the platen carried by the pivotally mounted arm is movable toward and away from the other fixed platen. In use, a pallet is disposed on the bearings and located such that the portion of the stringers undergoing repair is positioned between the opposed platen faces. The cylinder is actuated to pivot the one arm whereby the platens embed the teeth of the reinforcing plates carried thereby into the opposite sides of the stringer.

3,823,862

CLAMPING TOOL

Wayne R. Reedy, Cazenovia, and Edward F. Russ, Baldwinsville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,773
Int. Cl. B23k 1/00
U.S. Cl. 228—4 11 Claims



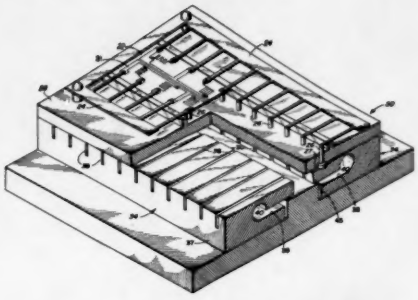
A tool for forcing a pair of tubular workpieces coaxially together, comprises a stationary clamp for gripping one workpiece and a second clamp mounted on a movable piston for gripping the other workpiece. The clamps each include a fixed arm, and a rotatable arm extending from a shaft which is rotatable in response to the application of fluid pressure to a vane fixed to the shaft. Movement of the piston towards the first clamp urges workpieces held by the clamps into a telescoping relationship.

3,823,863

COMPENSATING BASE FOR LEAD-FRAME BONDING

Benjamin Piechocki, Bethlehem, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 333,267, Feb. 16, 1973, which is a division of Ser. No. 207,854, Dec. 14, 1971, Pat. No. 3,729,810. This application July 30, 1973, Ser. No. 383,874
Int. Cl. B23k 19/00
U.S. Cl. 228—6 7 Claims



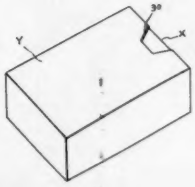
Bonding of lead frames to ceramic substrates is performed on a bonder with a compensating base. The compensating base includes a series of cantilever spring elements attached to a rigid support. The elements are reduced in cross sectional area near the point of attachment to the rigid support. A free end of each of the spring elements is placed under each point of the substrate to which a lead is to be bonded. The elements accommodate to variations in thickness and waviness of the substrate so that it does not crack during the bonding operation.

3,823,864

CONTAINER WITH A CATCH FOR PRESSING AND OPENING A LID

Hachiro Ohkubo, Osaka, Japan, assignor to Kinki Printing Company Limited, Osaka-shi, Japan

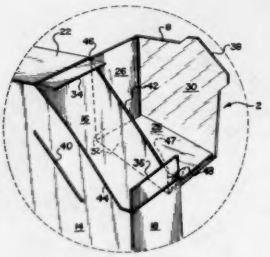
Filed June 1, 1972, Ser. No. 258,824
Claims priority, application Japan, June 11, 1971, 46-49755
Int. Cl. B65d 5/38
U.S. Cl. 229—19 1 Claim



This invention relates to a container. The said container comprises a hexahedronal outer case with its right side open and is provided with a cut-off portion at the right edge of its upper wall, and an inner case having a base plate, front and back walls, a left side wall and a compressible and deformable right wall in the shape of a quadrilateral three-dimensional

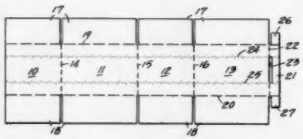
body. When the top of the quadrilateral three-dimensional body is pressed and opened, that pressed body constitutes the catch for pressing and opening a lid. The said inner case is slidable within the said outer case.

3,823,865
PACKAGE FOR CIGARETTE AND THE LIKE
William R. Mechnick, de la Cote 10-1110, Morges, Switzerland
Filed Aug. 7, 1972, Ser. No. 278,420
Int. Cl. B65d 5/66
U.S. Cl. 229—44 CB 3 Claims



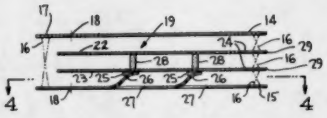
A package for cigarettes is provided, the package being formed from a single blank sheet of material and includes top and bottom panels, two side panels, a front facing panel and a back facing panel and a lid as an integral part thereof. The lid which includes, front, top, side and back portions is fashioned to fit over and cover an open top corner of the package and is hingedly connected to the back facing panel along an oblique fold line on said back facing panel extending from the top panel towards one of the side panels of the package. A blank from which the package is formed is also provided.

3,823,866
TEAR STRIP ARRANGEMENT FOR CONTAINERS
John R. Elward, Novato, and Stanley B. Inglis, Greenbrae, both of Calif., assignors to Fibreboard Corporation, San Francisco, Calif.
Filed Aug. 14, 1972, Ser. No. 280,090
Int. Cl. B65d 5/54
U.S. Cl. 229—51 TS 6 Claims



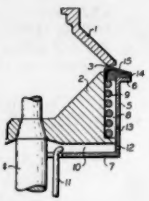
A shipping container comprises upstanding sidewalls secured together by a manufacturer's glue flap and a removable tear strip formed around the container by parallel tear lines which extend completely through the sidewalls and the glue flap. A vertically disposed slot is formed at the corner whereat the glue flap is secured to a sidewall to permit the tear strip to be grasped and removed from the erected container in either direction.

3,823,867
ENVELOPE ASSEMBLY
Emil A. D'Luhy, Youngstown, and William R. Wakeman, Ransomville, both of N.Y., assignors to Moore Business Forms, Inc., Niagara Falls, N.Y.
Filed Sept. 6, 1972, Ser. No. 286,823
Int. Cl. B65d 27/10, 27/32
U.S. Cl. 229—69 3 Claims



A manifold assembly comprising a plurality of series-connected envelopes, each having front and back panels with insert material within each envelope, means for securing the panels together to form an envelope pocket for the insert material, the insert material having marginal edges adjacent but unattached to the securing means, means for opening the envelope pocket and means connecting the insert material to an adjacent one of the panels so as to maintain the insert material in a desired registration position within the envelope pocket, the connecting means comprising an easily releasible adhesive and tabs formed in the one panel on which the adhesive is located so that, during extraction of the insert material as the envelope pocket is opened, the connection between the insert material and the one panel is gradually broken as the tabs are moved in the direction of insert material extraction.

3,823,868
SLUDGE EJECTING CENTRIFUGE
Martin Baram, 2660 Brondby Strand, 13 Svanholmvej, Denmark
Filed Feb. 14, 1973, Ser. No. 332,330
Claims priority, application Denmark, Mar. 1, 1972, 935/72
Int. Cl. B04b 1/14
U.S. Cl. 233—20 A 9 Claims

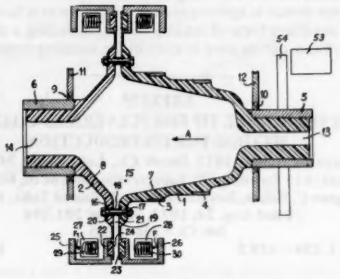


A sludge ejecting centrifuge with an unbroken 360° ejection slit which is opened and closed by an annular sealing device which is held in closed position by an annular spring arrangement that surrounds the rotor and which is held in open position by centrifugally generated hydrostatic pressure of injected control fluid.

3,823,869
CENTRIFUGAL SEPARATING APPARATUS
Robert Loison, Residence des Presidanes 54, Avenue de Verdun 78, Croissy sur Seine, France
Filed Apr. 5, 1973, Ser. No. 348,095
Claims priority, application France, Apr. 21, 1972, 72.14284
Int. Cl. B04b 1/14
U.S. Cl. 233—20 R 12 Claims

Centrifugal separating apparatus comprises a rotatable drum formed from at least two axially-spaced parts. The ad-

jacent portions of adjacent parts have frusto-conical walls which co-operate to define a chamber which receives a component separated in the drum. The adjacent edges of the parts



comprise lips of a deformable material which bound an outlet opening from the chamber. The lips are associated with means for selectively closing the opening, for example by moving the lips together.

3,823,870

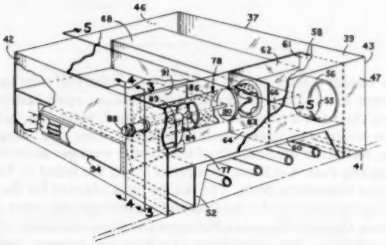
AIR CONDITIONING WITH MIXING DUCT

Robert B. Chandler, South Pasadena, Calif., assignor to Kilpatrick & Company, Alhambra, Calif.

Division of Ser. No. 54,782, July 14, 1970, Pat. No. 3,720,258. This application Dec. 27, 1971, Ser. No. 212,593

Int. Cl. F24f *3/08*

U.S. Cl. 236—49 **16 Claims**



An air conditioning system and method of operating an air conditioning system wherein conditioned primary air is transmitted to a plenum chamber in a terminal unit, which terminal unit may be positioned for example, directly within a space to be conditioned or supported above a suspended ceiling in a space to be conditioned. A portion of the primary air is utilized to pass through nozzles and establish primary air flow in a mixing duct, which flow may induce and mix with a flow of secondary air to constitute supply air for discharge into a space to be conditioned. The supply air may comprise solely primary air or selectively variable volumes of primary air and secondary air, which secondary air may include selectively variable volumes of air recirculated from the space being conditioned and, if appropriate, air from the plenum chamber formed by a suspended ceiling in the space to be conditioned.

Additionally, an air handling or terminal unit according to the invention may include a casing connected to a source of primary air for providing a constant flow of primary air and a selectively variable flow of primary air, means for selectively introducing and mixing a flow of secondary air with the constant flow of primary air, the secondary air comprising selectively volumes of recirculated air from the space and, if appropriate, volumes of air drawn from the plenum chamber defined by a suspended ceiling in the space to be conditioned and a control means for controlling the thermal capacity of supply air for the space, the supply air including the primary air from the constant flow and, selectively, volumes of additional or by-pass primary air and secondary air.

3,823,871

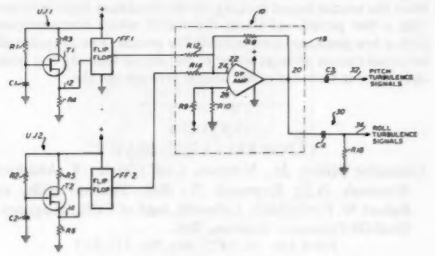
AIR TURBULENCE SIMULATION APPARATUS

James R. Patmore, Neptune, and Joseph E. Sidoti, Red Bank, both of N.J., assignors to Electronic Associates, Inc., Long Branch, N.J.

Filed Apr. 16, 1973, Ser. No. 351,246

Int. Cl. G06g *7/26, 7/72*

U.S. Cl. 235—197 **7 Claims**



Air turbulence simulation apparatus for providing pitch turbulence signals for simulating pitch turbulence and for providing roll turbulence signals for simulating roll turbulence, such apparatus including first means for providing first signals at a first predetermined frequency; second means for providing second signals at a second predetermined frequency; the second predetermined frequency being lower than the first predetermined frequency; summing means for receiving and summing the first and second signals and for providing third signals which are the sum of the first and second signals; coupling means for receiving the third signals and for providing the pitch turbulence signals and the roll turbulence signals; such simulation apparatus may also include differentiating means for receiving the third signals and for differentiating the third signals to provide the roll turbulence signals whereby the differentiated roll turbulence signals are of shorter duration than the pitch turbulence signals.

3,823,872

NOZZLE FOR USE IN HOT LIQUID EJECTOR PUMPS, AND RELATED PROCESS

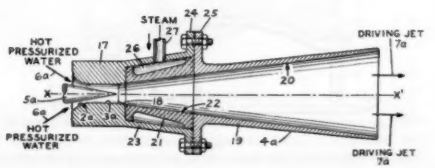
Otto Frenzl, Dammarie-les-Lys, France, assignor to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation, Paris, France

Filed Oct. 26, 1972, Ser. No. 301,171

Claims priority, application France, Nov. 19, 1971, 71.41528

Int. Cl. B05b *7/00*

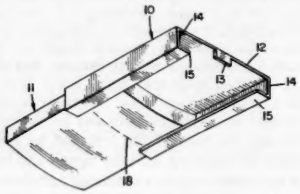
U.S. Cl. 239—8 **28 Claims**



The efficiency of conventional hot-liquid nozzles of the type normally used to create the driving jet in ejector pumps is in-

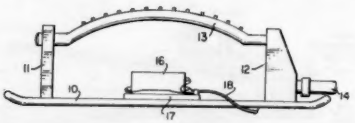
creased by eliminating at least a part of the predominantly liquid boundary layer normally found on the inner surfaces of such nozzles. The boundary layer can be eliminated by providing within the nozzle a gas layer in contact with the inner surfaces of the nozzle or by withdrawing from the nozzle liquid making up the boundary layer. This is accomplished by providing in the nozzle wall, means such as orifices, slits or porous sections which permit the transmission of a fluid such as a gas or liquid through the wall. Thus gas can be injected through such means from a source external to the nozzle to form the gas layer within the nozzle, or boundary layer liquid present within the nozzle can be withdrawn from the nozzle. The result of such procedures is to displace, and/or minimize the formation of the liquid boundary layer. The gas can be injected through the nozzle walls at various locations along the length of the nozzle. One technique for physically removing from the nozzle liquid making up the boundary layer is to provide a thin peripheral slit in the nozzle which communicates with a low pressure zone outside the nozzle. The pressure differential causes at least some of the liquid forming the boundary layer to flow out of the nozzle through the slit.

3,823,873
VAPOR RELEASING DEVICE
Alexander Miller, Jr., Modesto, Calif.; Victor F. Anderson, Wenonah, N.J.; Raymond W. Holt, Pleasant Hills, and Robert W. Fortenbach, Lafayette, both of Calif., assignors to Shell Oil Company, Houston, Tex.
Filed Jan. 15, 1973, Ser. No. 323,547
Int. Cl. A24f *25/00*
U.S. Cl. 239—54 **12 Claims**



A vapor releasing device for reodorants, pesticides or other vaporous materials is defined by a flat upper portion having opposing downwardly extending walls which contain inwardly protruding lips forming slots or openings. A flexible solid containing the vaporous material is engaged in the slot or openings. Extending downwardly from the upper portion at each end of the slot or opening is a post which prevents removal or fallout of the flexible solid when engaged.

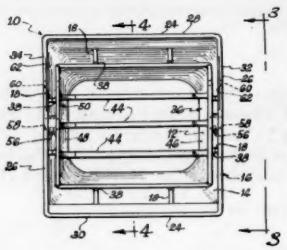
3,823,874
CONTROL FOR LAWN SPRINKLER
Herbert Kroeck, 120 Jefferson St., East Islip, N.Y. 11730
Filed Apr. 13, 1973, Ser. No. 350,954
Int. Cl. A01g *25/00*
U.S. Cl. 239—65 **4 Claims**



A sprinkler control device using any type of water sprinkler and a sensing device comprising a water tank with conductive terminals. When the tank is dry or filled only to a shallow level, a control unit causes a solenoid to open the water supply valve and the sprinkler is operated. When the sensing tank is filled to a predetermined level, the control circuit operates the solenoid valve and cuts off the water. When the water evaporates from the sensing tank and is lowered to a second level, the device is again operated and the water is turned on.

An auxilliary form of sensing device, including a absorbent cotton band, can be used to control the watering system.

3,823,875
BURNER NOZZLE TIP FOR PULVERIZED COAL AND METHOD FOR ITS PRODUCTION
Terrence E. Bauer, 1011 Dover Ct., Lake Bluff; Michael E. Bauer, 615 Downing Pl., Libertyville, both of Ill. 60048, and Eugene C. Bauer, Box 370 RR No. 1, Round Lake, Ill. 60073
Filed Aug. 24, 1973, Ser. No. 391,498
Int. Cl. F23d *13/36*
U.S. Cl. 239—419.5 **10 Claims**

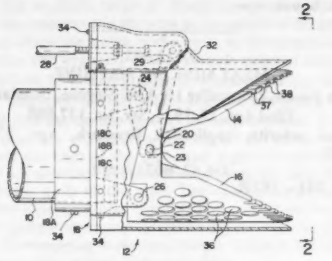


A burner nozzle tip for a pulverized solid fuel combustion furnace is formed of a stainless steel, hollow, open ended cast outer shell and a replaceable stainless steel, weld-free, hollow, open-ended cast inner shell wherein at least one integrally cast, weld-free internal rib of the former engages at least one integrally cast, weld-free elongated rib of the latter to form a unitary concentric body. The nozzle tip is adapted for the projection of pulverized solid fuel and air through the inner shell, and air through the space between the inner and outer shells. A method for the production of a heat and erosion resistant tangential burner nozzle tip for a pulverized solid fuel combustion furnace is provided which includes casting the said shells and positioning the inner shell within the outer shell with each rib of the former engaging a rib of the latter whereby a unitary weld-free, concentric shelled burner nozzle tip is obtained.

3,823,876
FOAM DISPERSAL NOZZLE
John C. Hardy, Gorham, and A. Brian Stevens, South Windham, both of Maine, assignors to Rockwood Systems Corporation, South Portland, Maine
Filed Dec. 18, 1972, Ser. No. 316,138
Int. Cl. B05b *1/34*
U.S. Cl. 239—504 **6 Claims**

A foam dispersal nozzle has a hood enclosure containing two perforated deflectors mounted therein. The deflectors are mounted on a pivot shaft in opposed relationship to each other. An actuator handle extends from the deflectors in pivoting relation about the pivot shaft. The opposed downstream ends of the deflectors have a series of teeth formed therein. The perforations in said deflectors are chamfered to a knife edge at least along the downstream portions

thereof. The size of the opening formed between the toothed ends of the deflectors and the angle of attack formed between



the deflectors and a fluid stream moving through the nozzle may be varied by operating the actuator handle to pivot the deflectors around the pivot shaft.

3,823,877

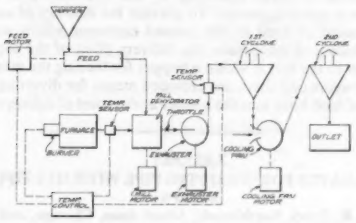
APPARATUS AND PROCESS FOR REDUCING WASTE ORGANIC MATERIALS INTO CLEAN, STERILIZED POWDER, MEAL OR FLAKES

Joseph L. Poggie, 815 Iris Ln., Vero Beach, Fla. 32960

Filed June 5, 1972, Ser. No. 259,869

Int. Cl. B02c *21/00*

U.S. Cl. 241—19 **8 Claims**



An apparatus and process are provided for rapidly and efficiently processing raw organic material into high quality clean, sterilized powder, meal or flakes. Means are provided for dividing the organic material into particles of substantially uniform size and for feeding the particles into milling and heating means. The particles are then simultaneously milled and heated by applying centrifugal forces to grind the material, and controlled laminar flow of hot air or gases to dry the material until the desired powder meal or flakes are produced. The powder, meal or flakes are then withdrawn from the milling and heating means and heated air and steam are separated therefrom.

3,823,878

SHEARING CRUSHER

Yutaka Ishikura, Osaka, Japan, assignor to Horai Tekko Sho Co., Ltd., Osaka, Japan

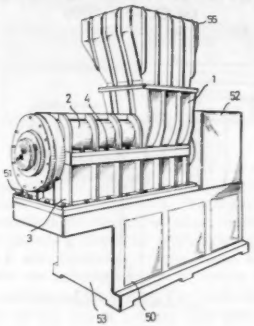
Filed Nov. 17, 1972, Ser. No. 307,502

Claims priority, application Japan, Nov. 17, 1972, 47-92546

Int. Cl. B02c *13/284*

U.S. Cl. 241—69 **9 Claims**

A crusher comprising a cylindrical crushing chamber defined by a casing composed of at least two segments dividably joined together diametrically thereof, the crushing chamber having a feed inlet at its starting end and a discharge outlet at its terminal end, stationary blades interposed between the joining faces of the segments and extending over the entire length of the crushing chamber in parallel to its axis, and blocklike rotary cutters rotatably supported on a shaft side by side within the crushing chamber and each having on its outer periphery a plurality of helical blades at a desired twist angle with respect to the axis. Since the blade of the block-like rotary cutter has the desired twist angle with respect to the stationary blades, both blades shear a material in an obliquely cutting manner while a thrust acting on the face of the helical blade pushes the material forward within the crushing chamber during shearing. The crushing chamber is formed in its lower portion with an opening extending over



its entire length and provided with size regulating member having a semicircular cross section and a great number of discharge control apertures for controlling the crushed product to a uniform size. The size regulating member may further be provided at the terminal end of the crushing chamber to continuously discharge from the chamber crushed pieces not greater than the desired size to permit the thrust to act effectively. Irrespective of whether the material is hard, soft, ductile or fragile the crusher is capable of crushing various materials such as tire incorporating bead wire, empty can, plastics, paper, wood, fiber, glass, straw, etc.

3,823,879

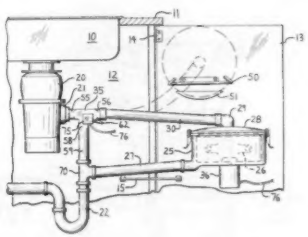
KITCHEN COMPOSTER

Harold R. Johnson, 1664 Sunrise Cir., N.N., Salem, Oreg. 97304

Filed Mar. 23, 1973, Ser. No. 344,131

Int. Cl. B02c *21/00*

U.S. Cl. 241—101.2 **9 Claims**



This apparatus is connected with a kitchen disposer-grinder for de-watering and collecting ground food scraps that are suitable for garden compost. A de-watering spin chamber containing a rotary spin basket is mounted on the inside of the door on an under-sink closet. A flexible drain tube from the spin chamber discharges into the sink drainpipe. A flexible inlet tube for the spin chamber is connected to one outlet of a

bypass valve. A second outlet of the bypass valve is connected to the sink drainpipe. The bypass valve receives the discharge from the disposer-grinder mounted in the sink drain whereby material that is suitable for compost use may be bypassed to the spin chamber where it is de-watered and collected while liquids and other ground material not desired for compost may be discharged directly into the drainpipe.

3,823,880

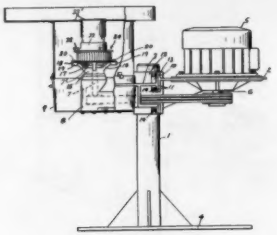
MACHINE FOR REDUCING THE SOUND LEVEL OF ITS OPERATION

Joe R. Urschel, 202 Michigan, Valpersiso, Ind. 46383

Filed Oct. 24, 1972, Ser. No. 300,102

Int. Cl. B02c *18/00*

U.S. Cl. 241—86 **18 Claims**



The invention involves a cutting mill having a cylindrical head provided with a plurality of circumferentially arranged cutting edges and an impeller which is rotatable at a relatively high rate of speed and provided with blades which are so designed and constructed that the noise of the mill during its operation is appreciably reduced to an acceptable limit which will not impair the hearing of an operator.

3,823,881

DEVICE FOR CRUSHING LARGE MOLDING SAND PIECES AND FOR SEPARATING RESIDUAL IRON PARTS THEREFROM

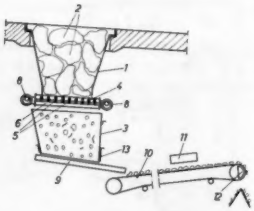
Konrad Grob, Siebnen, Switzerland, assignor to Alfred Gutmann Gesellschaft fur Maschinenbau, Hamburg, Germany

Filed May 25, 1972, Ser. No. 256,957

Claims priority, application Germany, May 27, 1971, 2126284

Int. Cl. B02c *19/20*; **B07b** *13/00*

U.S. Cl. 241—79.1 **4 Claims**



A device for crushing large molding sand pieces and removing iron parts therefrom, according to which a cutting device, preferably in the form of crosswise arranged cutting edges, is interposed between feeding means for feeding the large molding sand pieces to be cut up and a receiving container for receiving the cut up molding sand, while only the cutting device is oscillated, a conveyor being associated with the outlet of the receiving container for receiving the molding sand from the receiving container, while magnets adjacent the conveyor are adapted to withdraw iron parts from the molding sand on the conveyor.

3,823,882

MEAT MINCING MACHINE

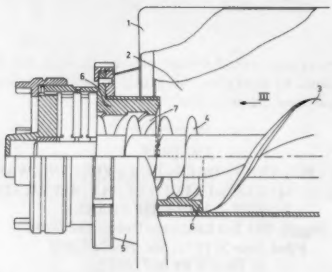
William Jensen, Tjorneallee 10, 4200 Slagelse, Denmark

Filed Apr. 27, 1971, Ser. No. 137,908

Claims priority, application Denmark, Apr. 27, 1970, 2115/70

Int. Cl. B02c *18/30*

U.S. Cl. 241—152 R **4 Claims**



Apparatus for grinding food particularly frozen meat, which comprises two worm conveyors, the second and smaller one of which receives meat conveyed by the first conveyor and passes it to grinding means. To prevent the delivery of an excess amount of food to the second conveyor which would cause stalling of the device, the delivery point of the second conveyor to the first is within a hopper for feeding the meat to the conveyors and there are provided means for diverting the excess of food back into the hopper at the point of delivery.

3,823,883

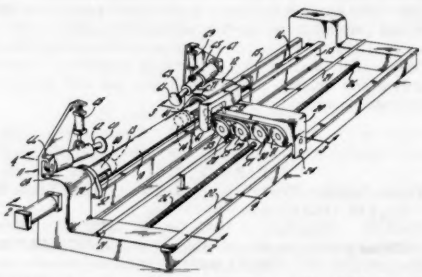
APPARATUS FOR WRAPPING PIPE WITH MULTIPLE STRIPS

Vernon R. Fencl, Northbrook; Albert Roze, Chicago, and Edward M. Naureckas, Gurnee, all of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.

Filed Feb. 22, 1972, Ser. No. 227,995

Int. Cl. B65h *81/08*; **B21f** *3/04*

U.S. Cl. 242—7.23 **3 Claims**



A method and apparatus for wrapping pipe, of the type used in gas pipe lines for example, with multiple strips of metal strapping. The pipe is mounted on a pair of chucks which fit into the open ends of the pipe to rotate the pipe while multiple spools of metal strapping are moved axially along the pipe.

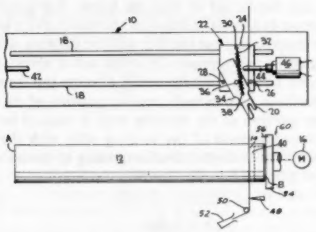
The ends of the multiple strips of strapping are initially clamped to a dummy mandrel having the same outside diameter as the pipe, and this mandrel is rotated along with the pipe so that the multiple strips of strapping are wound helically around the mandrel and the pipe as the spools of strapping are traversed along the length of the pipe. At the terminating end of the pipe, the wrapping of the multiple strips of strapping is continued on to a second dummy mandrel having the same outside diameter as the pipe, and the strapping is then clamped and cut on the second dummy mandrel. A pair of cutting discs are provided for cutting off the metal strapping flush with the ends of the pipe, and a pair of clamping ring locators are provided for positioning clamping rings adjacent the opposite ends of the pipe. The chucks which hold and rotate the pipe comprise expanding mandrels for expanding the pipe and the wrapping outwardly against the clamping ring so that the wrapping is clamped firmly between the clamping ring and the pipe at both ends of the pipe.

3,823,884

APPARATUS AND METHOD FOR FORMING A PIECING END FOR WOUND YARN

Roland Sartori, Riorges, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Oct. 16, 1972, Ser. No. 297,730
Int. Cl. B65h *54/34*
U.S. Cl. 242—18 PW **5 Claims**



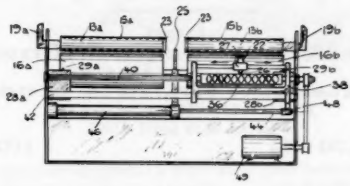
Apparatus for forming a piecing end for yarn wound on a rotatable support including a traveller movable along a reciprocating path parallel to the longitudinal axis of the support, a yarn guide pivotally mounted on the traveller and having a normal position for forming primary windings on the support and an extended position for forming piecing end windings on the support, and actuator members disposed at opposite ends of the reciprocating path for contacting the yarn guide to change positions thereof, the actuator member operable to place the yarn guide in the extended position being selectively movable to an inoperative position unable to contact the yarn guide such that, after initial forming of piecing end windings, the yarn guide remains in the normal position for forming primary windings on the support. A method of winding yarn on a rotating support including moving a traveller pivotally carrying a yarn guide toward an end of a reciprocating path with the yarn guide in the normal position, pivoting the yarn guide to an extended position to catch yarn to be wound at a point near the end of the reciprocating path and deliver the yarn to an end portion of the support to form piecing end windings, moving the traveller back towards an opposite end of the reciprocating path with the yarn guide in the extended position, returning the yarn guide to a normal position for forming primary windings on the support at the opposite end of the reciprocating path, and moving the traveller back and forth along the reciprocating path with the yarn guide in the normal position to form piecing end windings around the support.

3,823,885

APPARATUS FOR CONTINUOUSLY WINDING FILAMENTARY MATERIAL

Robin F. De Schulthess, Montreal, Quebec, Canada, assignor to The Bobtex Corporation Limited, Montreal, Quebec, Canada

Filed July 3, 1972, Ser. No. 268,791
Claims priority, application Canada, July 8, 1971, 117792
Int. Cl. B65h *54/02*
U.S. Cl. 242—18 A **19 Claims**



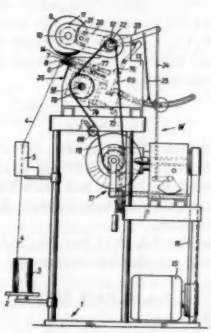
There is provided an apparatus for continuously winding yarn on a pair of successive bobbins. This apparatus comprises a pair of mandrels positioned in axial relationship to one another and including means for releasably supporting a pair of bobbins. It also comprises driving means for rotating the mandrels with the bobbins thereon in surface contact with a pair of rolls and means for moving the mandrels with the bobbins thereon in and out ot contact with said rolls. The apparatus also includes a unitary guide-traveler-transfer assembly which comprises a yarn guide mounted on a traveler which reciprocates on a traveler roll for laying the yarn backward and forward onto a bobbin, and a carriage for the guide, traveler and traveler roll with transfer means for transferring this carriage from in front of a full bobbin to in front of an empty bobbin. Finally means are provided for anchoring the yarn on the empty bobbin during the transfer operation as well as for cutting this yarn between the two bobbins.

3,823,886

APPARATUS FOR WINDING MATERIALS, SUCH AS THREADS, YARNS OR BANDS INTO CROSS-WOUND BOBBINS

Walter Siegenthaler, Erlenbach, Switzerland, assignor to Maschinenfabrik Scharer

Filed Jan. 26, 1972, Ser. No. 220,960
Claims priority, application Switzerland, Feb. 6, 1971, 1764/71
Int. Cl. B65h *54/32*
U.S. Cl. 242—43.1 **13 Claims**



The apparatus comprises first and second yarn guides rotatable in opposite directions about respective axes of rota-

tion which are offset from each other. Respective substantially circular-shaped guide means are provided for each of the yarn guides, centered on the respective axis of rotation of each yarn guide, so that the guide tracks intersect each other at a pair of diametrically opposite points for overlapping of the thread guides at these points. Each yarn guide is connected with a rotatably driven arm member. Means are also provided for changing the positive of the guide paths relative to the drive center points of the arm members, whereby it is possible to regulate the position of the points of intersection of the yarn guides.

3,823,887

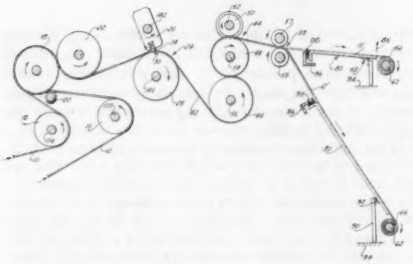
DEVICE FOR FORMING LIGHTWEIGHT PAPER INTO ROLLS WITHOUT ANY CORE

David E. Gerstein, 63-33 98th Pl., Forest Hills, N.Y. 11374

Filed Dec. 23, 1971, Ser. No. 211,319

Int. Cl. B65h *15/02, 35/02*

U.S. Cl. 242—56.2 **13 Claims**



A device for coreless rolls of very lightweight fiber material, such as tissue, comprises feeding one or move continuous webs of the tissue material into juxtaposition and then for directing it into association with a perforator and a slitter. The paper which has been slit is then fed along a feed path onto winding mandrels. The windup of the tissue on the mandrel is effected by first wetting the edge so that it engages with the mandrel. The tissue is wound into a coil of predetermined thickness and it is broken away from the continuous web along the perforations by the simple expedient of moving a flat boardlike member upwardly through the path of movement of the tissue to sever it along the perforations. The end is guided along the roll by a semi-annular member which engages around the exterior surface of the tissue roll. Thereafter, the mandrel is released at one end and pivoted outwardly from its support and the wound tissue roll is pulled off an end thereof. It is also possible with an embodiment of the invention to feed the tissue which has been slit into guide tubes or folding gauges which fold them into one or more folds as they are wound into a coreless roll.

3,823,888

APPARATUS FOR DETECTING AND GUIDING THE LEADERS OF PHOTOGRAPHIC ROLL FILMS

Helmut Zangenfeind, Puchheim, and Erich Nagel, Anzing, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

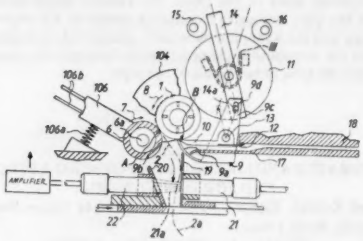
Filed May 11, 1972, Ser. No. 252,416

Claims priority, application Germany, May 19, 1971, 2125084

Int. Cl. B65h *75/00*

U.S. Cl. 242—55 **23 Claims**

Apparatus for detecting, intercepting and guiding the leader of photographic film which is convoluted on a spool within a convoluted backing strip whose front portion extends beyond the leader of the film has a bearing which rotatably supports a spool and a drive which rotates the spool in a direction to pay out the film and the backing strip. A deflector is biased against the outermost convolution of the backing strip on the rotating spool to deflect the front portion of the backing strip into a first path while simultaneously preventing entry of the leader of film into a second path wherein the leader is to advance toward a splicing station to be joined with the trailing end of a preceding film. A photoelectric detector scans the path for the backing strip and produces a signal in response to detection of the front portion whereby such signal causes a rotary elec-



tromagnet to move the deflector out of register with the inlet of the path for the leader so that the leader can enter such path in response to further rotation of the spool. Prior to rotation in a direction to pay out the film and the backing strip, the spool is rotated to the opposite direction and is arrested by a tracking device having a nozzle which attracts the front portion of the backing strip in such angular position of the spool that the front portion of the backing strip is located between the points of engagement of the backing strip with the drive means and with the deflector. Such orienting of the spool can be carried out prior to introduction into the bearing.

3,823,889

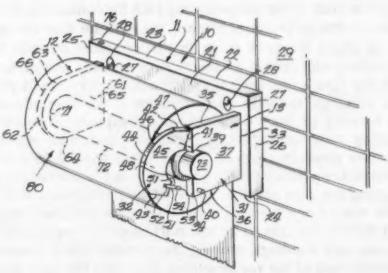
TOILET PAPER HOLDER

Leland R. Johnson, and Leland A. Johnson, both of 611 N. 13th St., San Jose, Calif.

Filed Sept. 12, 1973, Ser. No. 396,380

Int. Cl. B65h *19/00*

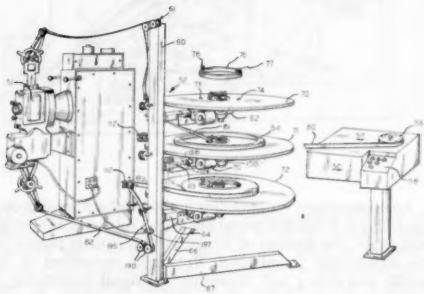
U.S. Cl. 242—55.2 **4 Claims**



A spring loaded easy-on easy-off toilet paper holder consisting of a base having a pair of arms extending at right angles

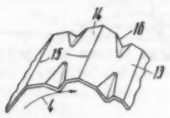
from the base and longitudinally spaced apart, one of the arms being hinged to the base by a spring loaded hinge normally urging the arm into the normal position with a toilet paper holding spool projecting perpendicular from the end of the hinged arm in the direction of the other arm, the other of the arms being fixedly mounted on the base and aligned with the first arm and adapted to receive and retain the free end of the toilet paper holding rod projecting from the hinged arm such that a roll of toilet paper may be easily placed onto and removed from the toilet paper holder.

3,823,890
AUTOMATIC FILM FEED DEVICE
Edwin M. Potts, 710 W. Dodson, Urbana, Ill. 61801
Filed Nov. 22, 1971, Ser. No. 200,945
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.18 **2 Claims**



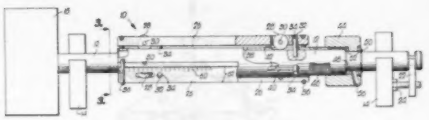
A plurality of rotatable horizontal turntable disks rotate to feed out or take up motion picture film, as it is transported through a projector. Optional threading arrangements enable any of the turntable disks to function as a supply or take up reel. Moreover, the third turntable effectively provides a spare which gives stand-by reliability. Suitable analog sensors detect film tension or broken film conditions and control the film feed accordingly. The analog sensors eliminate hunting as the mechanical operations proceed.

3,823,891
FILM CARTRIDGE
Hellmut Schrader, 3071 Eilvese, Nr 166 Germany
Filed Nov. 7, 1972, Ser. No. 304,332
Claims priority, application Germany, Nov. 9, 1971, 2155521
Int. Cl. G03b *1/04*
U.S. Cl. 242—71.1 **8 Claims**



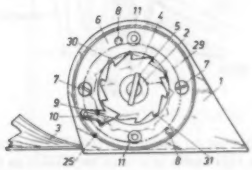
A film cartridge capable of receiving a continuous film wherein the cartridge includes spiral shaped guide members coiling the film when it is introduced into the cartridge, and wherein the guide members have several breaks in their curvature to provide a spiral like spring which touches the coiled film only at discrete points.

3,823,892
EXPANDABLE ROLL CORE SHAFT UNIT
Donald A. Glaser, Emporia, Kans., assignor to Didde-Glaser, Inc., Lyon, Kans.
Filed Sept. 5, 1972, Ser. No. 286,216
Int. Cl. B65h *75/24*
U.S. Cl. 242—72 **19 Claims**



A mechanically operated, expandable spool useful as a roll core shaft unit and having a plurality of longitudinally extending segments symmetrically located about a central shaft. A longitudinally movable, tubular member is located intermediate the shaft and segments with cam surfaces disposed to engage follower wheels carried by each of the segments. A drive collar carried by the shaft is threaded to the tubular member to drive the latter longitudinally relative to the segments causing the cam and follower to shift the segments radially and concentrically relative to the shaft to engage and disengage a roll of material. In one form the segments are rectangular bars having sharp corners for positively gripping a roll core carrying the material, and in another form the segments have circular outer surfaces allowing wind-up of the material directly therein.

3,823,893
SAFETY HARNESS
Gustav Einar Wilhelm Svensson, Villa Solhall, Box 61, S310, 33 Holm, Sweden
Filed Nov. 6, 1972, Ser. No. 303,686
Claims priority, application Sweden, Nov. 29, 1971, 15238/71
Int. Cl. A62b *35/02*; **B65h** *63/04*
U.S. Cl. 242—107.4 **15 Claims**



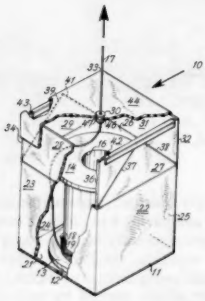
A blocking means in vehicle safety harnesses of the kind having a reel mechanism comprising a ratchet wheel with which the blocking means engages to lock the reel mechanism against further unwinding of the harness. The blocking means is floating freely in a cavity formed in a ring surrounding the ratchet wheel such that during normal use of the harness said blocking means is in a position beyond the circle of engagement of the ratchet wheel but upon tilting of the harness device as a result of an abnormal situation, the blocking means is actuated into engagement with the ratchet wheel, thus preventing further unwinding of the harness.

3,823,894

STRAND PACKAGE

John E. Frederick, North Muskegon, and Howard H. Peterson, Muskegon, both of Mich., assignors to The Anaconda Company, New York, N.Y.

Filed Jan. 4, 1973, Ser. No. 321,063
Int. Cl. B65h 49/18, 55/00, 75/02
U.S. Cl. 242—137.1 3 Claims



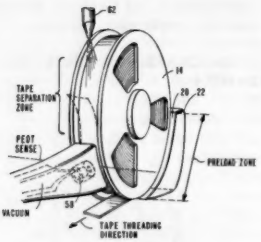
In a shipping and dispensing package for wire, a reel is fitted into a fiberboard carton of which the cover is formed by foldable extensions of the carton walls. When wire is being dereeled these are held open by stiffeners and support an eyelet for the wire at the proper distance above the upper flange of the reel.

3,823,895

AUTOMATIC TAPE LOADING APPARATUS AND METHOD THEREFOR

Hale M. Jones, Playa de Rey, and James P. Urynowicz, Los Angeles, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Mar. 3, 1972, Ser. No. 231,648
Int. Cl. G11b 15/66, 15/58
U.S. Cl. 242—186 9 Claims



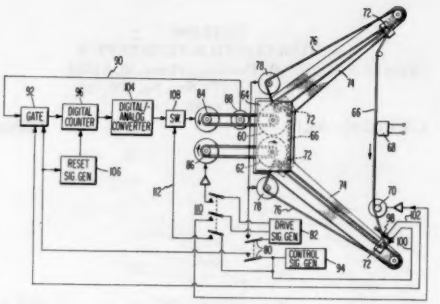
Apparatus having an automatic tape loading path extending between a file reel and a machine reel, such as a digital magnetic tape transport, incorporates a physical end of tape (PEOT) sensor, an air jet forcing the physical end against the sensor, and control electronics. As the file reel is rotated in the tape wind direction after loading, the air jet forces a length of tape near the physical end thereof into contact with the sensor which provides a control signal when the physical end of the tape passes the sensor. The control electronics continue rotation of the file reel through a predetermined angular distance to align the physical tape end with a preload point of an automatic tape loading path. This apparatus simplifies tape loading by automatically aligning the physical tape end with the tape loading path and provides a fully automatic detection of improper loading and a retry if a first attempt at automatic threading is not successful.

3,823,896

RECORDING WEB TENSION CONTROL

Morris Baer Finkelstein, Bellmawr, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 30, 1971, Ser. No. 167,375
Claims priority, application Great Britain, Mar. 29, 1971, 08113/71
Int. Cl. G11b 15/18, 15/66
U.S. Cl. 242—191 7 Claims



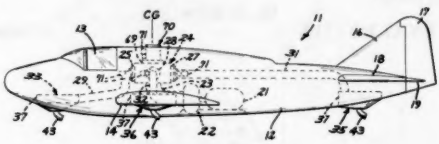
An arrangement for providing initial holdback tension on a recording web which is payed out from a rotatable web supply reel, where the amount of recording web initially present on the supply reel is unknown. Rotational movement of the supply reel during web disposition for signal transducing, is sensed and utilized to provide appropriate initial countertorque on the supply reel.

3,823,897

VERTICAL TAKE-OFF AND LANDING AIRCRAFT

Orville E. Bloomquist, 5516 Corvallis, North, Minneapolis, Minn. 55429

Filed May 30, 1972, Ser. No. 258,091
Int. Cl. B64c 15/02
U.S. Cl. 244—12 R 3 Claims



A vertical take-off and landing aircraft (VTOL) having a single source of thrust acting through a plurality of reaction nozzles displaced from various axes of the aircraft to provide the requisite functions of lift, thrust and attitude control. The nozzles are infinitely variable to generate thrust in the desired direction, and each includes an extensible portion which is retracted for lift-off and extended for forward flight after a predetermined altitude has been reached. A bypass valve per-

mits the thrust engine or engines to operate at full power during lift-off and landing. The aircraft includes a conventional control system for use at cruising speed.

3,823,898

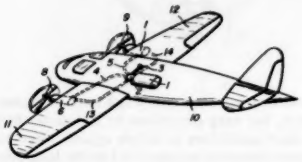
HYDRAULICALLY CONTROLLED FLUIDSTREAM-DRIVEN AIRCRAFT

Karl Eickmann, 2420 Isshiki, Hayama-machi, Japan

Continuation-in-part of Ser. No. 782,349, Dec. 9, 1968, abandoned, which is a continuation-in-part of Ser. No. 551,023, May 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 328,395, Dec. 5, 1963, Pat. No. 3,220,898. This application Mar. 8, 1971, Ser. No. 104,676

Int. Cl. B64d *27/02*

U.S. Cl. 244—55 **21 Claims**



In an aircraft a fluid handling device having a plurality of separated fluid handling working chamber groups with separated fluid outlets of each of said working chamber groups. Each fluid handling working chamber group has a plurality of individual fluid-handling spaces which together deliver the discharged fluid into the common fluid outlet of the respective working chamber group. Each working chamber group has an actuator means for actuating the respective displacement means, which move the working fluid into and out of the respective individual fluid handling spaces. Each fluid outlet of each working chamber group is connected by a respective uninterrupted fluid line directly to an associated fluid motor for revolving the same, while at least one propeller is associated with each respective fluidmotor to be driven by the same. The actuator means of more than one working chamber group are connected together for assuring equal or at least at all times proportionate actuation of the displacement means of the plurality of the working chamber groups. Thus equal or at least at all times proportionate rate of flow are forced out of the said separated fluid outlets through said fluidlines for forcing the said fluidmotors to revolve with equal or at least at all times proportionate rotary velocity of said fluid motors and propellers, whereby fluidstreams of equal or at least at all times proportionate thrust are generated and applied in substantial symmetric locations on the body of the craft to drive the same steadily in the desired direction.

3,823,899

ACTUATION SYSTEM FOR ANGULARLY POSITIONING AIRCRAFT LANDING GEAR WHEELS

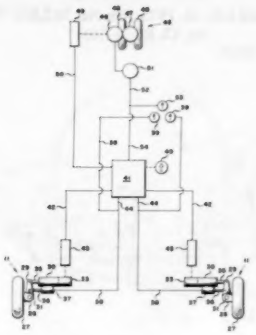
Norman S. Currey, Atlanta, Ga., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Oct. 20, 1972, Ser. No. 299,406

Int. Cl. B64c *25/50*

U.S. Cl. 244—103 W **2 Claims**

This device positions an airplane's landing gear wheels to a selected angle from the straight-ahead position relative to the longitudinal line of the aircraft or the direction of movement to compensate for crosswind landing and take-off. It comprises an axle for each such wheel, which axle is pivoted about a vertically oriented pin so that when the several axles are rotated by actuator means the desired wheel angle is effected.



Such actuator means may be a linear type, pushing or pulling a bellcrank arm made as part of the axle, or it may be a rotary type turning about the vertical axis.

3,823,900

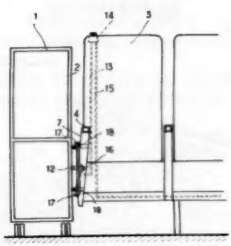
SUCTION SECURITY DEVICES

Robert Rene Marechal, Paris, France, assignor to Societe Industrielle et Commercial de Materiel Aeronautique (S.I.C.M.A.), Issoudun, France

Filed Apr. 20, 1972, Ser. No. 245,925

Int. Cl. B64d *11/04, 11/06*

U.S. Cl. 244—118 P **10 Claims**

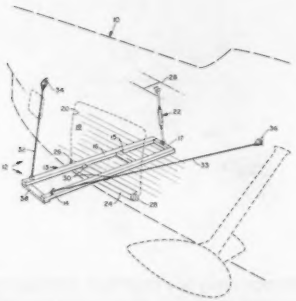


A device particularly suited to securing aircraft serving trolleys to seats during flight. The seat is fitted with a panel which is provided with an airtight seal. When the trolley is placed against the seal it operates a projecting valve member which causes air trapped in the space between the trolley and the panel to be exhausted and to thereby hold the trolley to the panel by suction. A further manually operable valve placed in a convenient position serves to connect the said space with the air in the cabin thereby allowing the trolley to be released. Suction can, in the case of a pressurised aircraft, conveniently be applied by connecting the space to the outside of the aircraft.

3,823,901
AERIAL LAUNCH SYSTEM

Karl A. Holmes; James R. Knepshield, and Dale E. Knutsen, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 24, 1973, Ser. No. 382,238
Int. Cl. B64d 7/00
U.S. Cl. 244—118 R 4 Claims

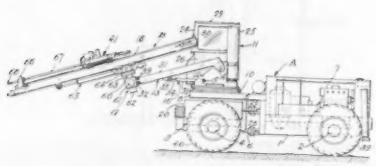


A launcher support structure is provided for a helicopter installation which may be quickly and easily installed or removed. The primary structural members extend across the floor of the helicopter and out a doorway. These members are attached to the helicopter structure at the door sill using existing hardware. A compression strut between the launcher structural members and overhead helicopter structure is utilized in the helicopter cabin and tension rods are extended from the extreme outboard ends of the structure to the fore and aft helicopter tie-down rings.

3,823,902
ARTICULATED VEHICLE

Hermann Karl Bumueller, 95-Dequire Blvd., Montreal, Quebec, Canada

Filed July 12, 1972, Ser. No. 271,052
Int. Cl. F16m 3/00
U.S. Cl. 248—2 17 Claims

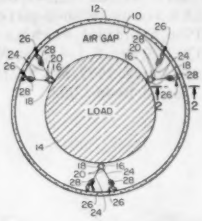


An articulated vehicle for carrying a working assembly, e.g., a drilling assembly, includes first and second frames and a platform extending cantileverwise from the first frame over the second frame; the working parts are all mounted on the first frame and the platform, the parts mounted on the platform being mounted on a turntable unit adapted to rotate 360°, whereby a projecting working assembly can be made to overlie the first frame; the vehicle can thus adapt a compact arrangement for travelling and shows good manoeuverability; the turntable unit has a braking arrangement applied directly to it.

3,823,903
DUAL LENGTH PENDULUM SHOCK ABSORBING SYSTEM

Giles A. Kendall, Des Moines, Wash.; James C. Hoppe, Burbank, and Wilbur P. Hsieh, La Canada, both of Calif., assignors to Menasco Manufacturing Company, Burbank, Calif.

Filed Mar. 3, 1972, Ser. No. 231,633
Int. Cl. G01n 29/00; F41f 3/04
U.S. Cl. 248—18 10 Claims

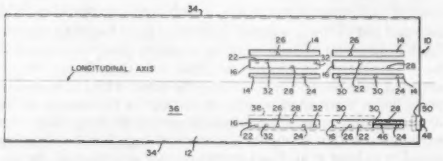


A shock absorbing system employing a long pendulum and a short pendulum, the long pendulum to isolate against small motions, the short pendulum to isolate against large motions. A spring-damper assembly is connected to the long pendulum to damp the horizontal motion of the long pendulum.

3,823,904
MACHINERY MOUNTING BASE

August M. Stenger, Campbellsville, Ky., assignor to Ingersoll-Rand Corporation, Woodcliff Lake, N.J.

Filed Aug. 28, 1972, Ser. No. 284,281
Int. Cl. F16m 11/04
U.S. Cl. 248—23 15 Claims



The base comprises a base plate having a plurality of slots formed therein, for receiving mounting bolts for machinery frames for mounting the machinery to the base plate, in which some of the slots have a greater width then the diameters of the shanks of the bolts used therewith. Accordingly, the wider slots restrain the bolts at only one side thereof against lateral movement. In addition, a strap coupled to an adjustment bolt is disposed below the slots being used, so that the machinery mounted thereabove can be displaced lengthwise along the base plate. The strap has threaded holes for engaging the machinery mounting bolts.

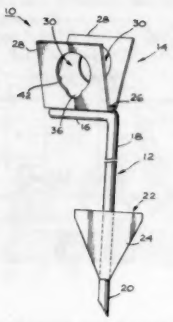
3,823,905
WATER HOSE ATTACHMENT HOLDER

McNally S. Ray, 3667 S. Van Ness Ave., Los Angeles, Calif. 90018

Filed Apr. 17, 1973, Ser. No. 351,878
Int. Cl. A47g 29/00
U.S. Cl. 248—87 3 Claims

An improved water hose attachment holder is provided which includes a guide member of extended surface area mounted on the upper arm of an elongated rod-like support

member having a pointed lower end. The support member bears a projection in the form of a wedged plate to act as a foot brace for inserting the support member into the ground. The guide member defines an elongated attachment-receiving passageway and releasable gripping means. In one form of the



guide member, a pair of spaced upstanding wings connected by a base define a pair of apertures aligned to form the passageway, while in another form the guide member comprises a hollow open tube having threaded opposite ends to detachably receive a water hose and the attachment.

3,823,906

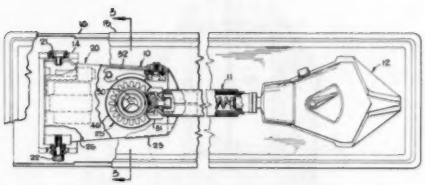
BASE ASSEMBLY FOR SWIVEL LAMP

Gerald L. Rogers, St. Louis, Mo., assignor to Chemetron Corporation, Chicago, Ill.

Filed May 7, 1973, Ser. No. 357,729

Int. Cl. F16m *13/00*

U.S. Cl. 248—279 **10 Claims**



This lamp base assembly includes an exterior housing pivotally mounted to a wall bracket, and an interior housing pivotally mounting an extensible arm to the exterior housing. A torsion spring, attached at one end to the exterior housing and at the other end to the interior housing, provides a resistance torque balancing the arm at a predetermined position. An adjustable brake shoe assembly mounted to the exterior housing and engageable with the interior housing provides the friction force necessary to compensate for imbalance of the arm at other positions.

3,823,907

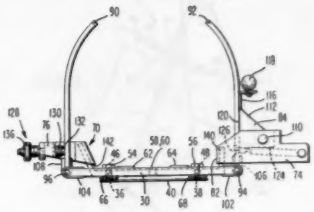
POSITIVE LOCKING DEVICE

Theodore Ziaylek, Jr., 95 Box 292, Yardley, Pa. 19068

Filed Jan. 10, 1973, Ser. No. 322,477

Int. Cl. A62c *33/00*

U.S. Cl. 248—313 **18 Claims**



A device for use with a walkaway bracket, adapted to positively grasp breathing apparatus. Slide rails are fastened to a bracket, which bracket is affixed to a rescue package. Locking means are slidably received between the slide rails, and which locking means include a plate slidably received between the slide rails, and housings mounted at the extremities thereof. One of the housings includes an actuating means, the other including a positioning means characterized by a positioning finger. The housings each include openings which receive therethrough arm members which are pivotally mounted to the slide rails. A cam is associated with the actuating means and is active on one of the arm members. This action is translated into sliding movement of the locking device toward that arm member. Simultaneously the arm members are pivoted toward convergence with each other and they positively grasp the tank of the breathing apparatus.

3,823,908

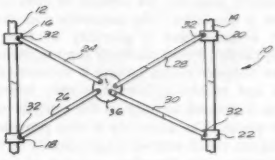
TENSIONING DEVICE

Edward M. Jarvis, Ambler, Pa., assignor to Standard Pressed Steel Co., Jenkintown, Pa.

Filed Oct. 19, 1972, Ser. No. 300,657

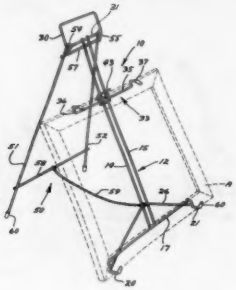
Int. Cl. E04h *12/00;* **E04b** *1/32*

U.S. Cl. 248—351 **9 Claims**



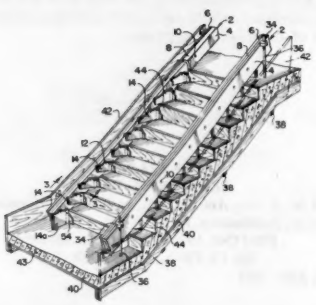
A tensioning device for use with sway braces which may be used to interconnect vertical shelving supports wherein the tensioning device in the form of a circular plate to which a plurality of the sway braces are secured is rotated to place a tensioning force on the sway braces and then secured to maintain the tensioning force.

3,823,909
ART CANVAS SUPPORT STRUCTURE
Clarence M. Thell, 4000 Elmwood, St. Paul, Minn. 55110
Filed Feb. 20, 1973, Ser. No. 333,694
Int. Cl. A47b 97/08
U.S. Cl. 248—452 1 Claim



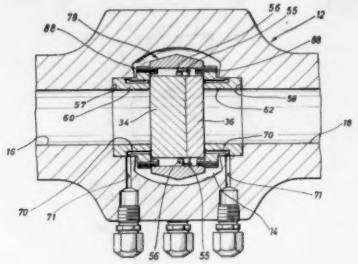
An art canvas holding and carrying device including an adjustable securing member, a self-collapsing supporting member and a hand holding carrying member.

3,823,910
STAIRCASE MOLD ASSEMBLY
Arthur La Verne Crozier, 8202 Fairmount Dr., S.E., Calgary, Alberta, Canada
Filed Sept. 8, 1972, Ser. No. 287,411
Claims priority, application Canada, Sept. 10, 1971, 122571
Int. Cl. B28b 7/22; E04g 13/06
U.S. Cl. 249—14 11 Claims



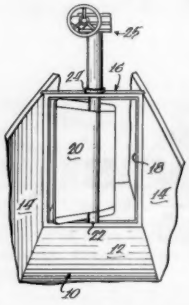
A molding assembly for cement or concrete staircase construction is disclosed. The assembly consists of an elongate support member and a plurality of riser support plates pivotally carried by the elongate support member with each of the riser support plates having a substantially upright edge portion and means to secure a riser board against which concrete is poured to each of the upright edges of the riser support plates. The assembly is also provided with elongate guide means which extend longitudinally of the elongate support member with the riser support plates being pivotally secured to the elongate guide means. With this arrangement longitudinal movement of the elongate guide means imparts uniform rotational movement to each of the riser support plates and results in the upright edges of the riser support plates being substantially vertical regardless of the angle of inclination of the staircase and of the support member. It is usual that the assembly is employed in pairs, but three or more such assemblies could be employed depending upon the width of the staircase.

3,823,911
SEATS FOR GATE VALVES
Paul J. Natho, and William L. Whaley, both of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed June 11, 1973, Ser. No. 368,920
Int. Cl. F16k 25/00
U.S. Cl. 251—167 5 Claims



A gate valve having a gate assembly of the expanding type employing a gate element and segment with adjacent wedge surfaces to expand the gate mechanism in both open and closed positions. Opposed floating seat elements are mounted within recesses of the valve body on opposite sides of the gate structure and spacers are connected to the opposed seat elements along opposed sides of the gate assembly to maintain a predetermined spacing between the seat elements but yet to permit floating of the seat elements. A predetermined minimum clearance between the seat elements and the gate assembly is maintained at all times by the spacers.

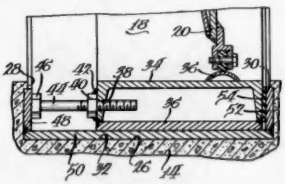
3,823,912
VALVE FOR INSTALLATION IN FLUME
Gregory A. Kurkjian, Jr., Wheaton, Ill., assignor to Henry Pratt Company, Aurora, Ill.
Filed June 7, 1973, Ser. No. 367,777
Int. Cl. F16k 1/22
U.S. Cl. 251—305 5 Claims



A valve, such as a butterfly valve, for installation in a flume or the like. The valve includes a body having a shape substantially corresponding to the cross section of the flume in which the valve is to be installed, the valve body being slightly larger in size about a majority of its periphery than the cross section of the flume so as to be receivable in a preformed recess in the wall of the flume. The valve body includes a fluid passage and a valve disc journalled therein for movement between open and closed positions and the body is provided with a tongue extending outwardly from the body at the periphery thereof in

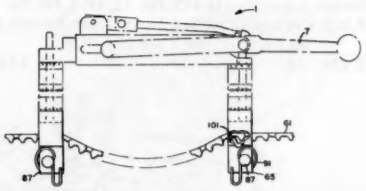
a direction substantially parallel to the fluid passage, which tongue is apertured for receipt of bolts which, in turn, may be fastened to the flume wall by means of conventional concrete anchoring elements.

3,823,913
VALVE FOR INSTALLATION IN FLUME
Gregory A. Kurkjian, Jr., Wheaton, Ill., assignor to Henry Pratt Company, Aurora, Ill.
Filed June 7, 1973, Ser. No. 367,778
Int. Cl. F16k 1/22
U.S. Cl. 251—305 12 Claims



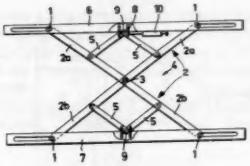
A butterfly valve for installation in a flume or the like. The valve includes a body having a shape substantially corresponding to the cross section of the flume in which the valve is to be installed, the valve body being slightly larger in size about a majority of its periphery than the cross section of the flume so as to be receivable in a preformed recess in the wall of the flume. The valve body includes a fluid passage and a valve disc journalled therein for movement between open and closed positions. The valve body is easily mounted in the groove formed in the wall of the flume by the provision of a plurality of threaded elements threadably received at spaced locations in the valve body about the majority of the periphery of the valve body and which may be extended to tightly embrace one side wall of the groove in the flume to force the opposite side of the valve body tightly against the opposite wall of the groove in the flume.

3,823,914
CHAIN ACCESSORY TOOLS
Frederick J. Coil, 109 Latham Trailer Cts., Latham, N.Y. 12110
Filed Apr. 9, 1973, Ser. No. 349,306
Int. Cl. B66f 3/00
U.S. Cl. 254—78 10 Claims



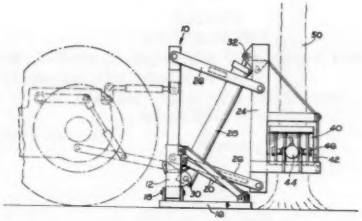
Discloses chain accessory tools for use with a chain accessory device that is operable for mounting a chain to be repaired, and for tightening same and at the same time rendering slack a portion of the chain for purposes of repair, said chain accessory tools, as carried for operative use by the chain accessory device are in a condition of bilateral symmetry and have similar construction. The chain accessory tools have hollow cylindrical elements and hooks. The hollow cylindrical elements are carried in fixed relationship by the chain guides of the chain accessory device, and the hooks are adapted to operatively engage portions of the chain to be repaired.

3,823,915
ELEVATOR TABLE
Siegfried Koehler, Wiesbaden, Germany, assignor to Trepel AG., Wiesbaden, Germany
Filed Dec. 29, 1972, Ser. No. 319,770
Claims priority, application Germany, Feb. 24, 1972, 2208777
Int. Cl. B66f 3/22
U.S. Cl. 254—122 8 Claims



An upper and a parallel lower platform are connected by at least two transversely spaced lever units each having two crossed levers which are pivoted at their point of intersection and whose respective upper and lower ends are provided with rollers guided in guides of the upper and lower platform, respectively. The upper and/or the lower ends of the crossed levers of each unit have associated therewith at least one additional lever one end of which is pivoted to the respective platform intermediate the ends of the levers associated therewith, whereas the other end is pivoted to one of the two levers of the unit intermediate the point of intersection of the levers and the end of the lever which is connected with the respective platform. More of the additional levers can also be provided.

3,823,916
IMPLEMENTS
Malcolm William Shaw, Alcester, England, assignor to M. W. Shaw (Steelworkers) Limited, Alcester, Warwickshire, England
Filed Dec. 18, 1972, Ser. No. 316,120
Claims priority, application Great Britain, Jan. 22, 1972, 3131/72
Int. Cl. B66f 3/00
U.S. Cl. 254—132 6 Claims

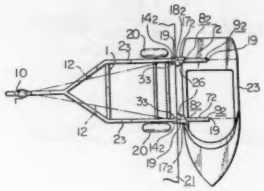


The invention provides apparatus for uprooting trees or tree stumps and for mounting on a tractor, and includes a first frame having plates which can be swung into a ground contacting position to provide a reaction to force used in the uprooting action, and a sub-frame mounted on the frame and hydraulically powered to lift relative to the frame, the subframe carrying a pair of jaws which are hydraulically powered to grip the tree or stump between them.

3,823,917
TRAILER CAPABLE OF LIFTING AND LOWERING BOATS OR THE LIKE

Masahiro Watabe, Kawanishi, Japan, assignor to Usui Kokusai Sangyo Kabushiki Kaisha, Shinuoka-ken, Japan

Division of Ser. No. 93,935, Dec. 1, 1970, Pat. No. 3,716,217.
This application Nov. 17, 1972, Ser. No. 307,633
Claims priority, application Japan, Jan. 10, 1970, 45-3089; Jan. 14, 1970, 45-4043
Int. Cl. B66c *23/60*
U.S. Cl. 254—139.1 5 Claims

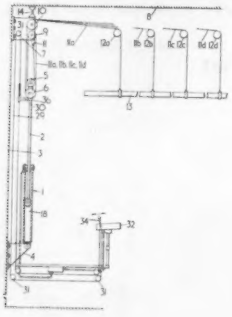


A trailer capable of lifting and lowering boats or the like which includes a trailer body of the type known per se having a winch device mounted thereon, and a foldable crane assembly pivotally connected to the rear end of the trailer body, whereby the crane assembly can be moved between a raised or operative position and a folded or inoperative position.

3,823,918
APPARATUS FOR MOVING SCENERY

Michael Ian Max Barnett, Thetford, England, assignor to Mole-Richardson (Stage & Studio Engineering) Limited, Thetford, Norfolk, England

Filed July 6, 1972, Ser. No. 269,302
Claims priority, application Great Britain, July 8, 1971, 32102/71
Int. Cl. B66c *23/60*; A63j *1/02*
U.S. Cl. 254—141 6 Claims

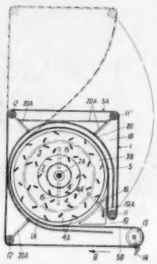


A hydraulic cylinder operating in the tensile mode moves a scenery bar by means of a pulley system. The movement of a cylinder rod of the hydraulic cylinder is conveyed by means of a cable to a drum. The drum turns a lead screw, which moves a travelling nut along a keyway. A pointer attached to the travelling nut indicates the position of the cylinder rod and consequently the height of the scenery bar. Abutment of the travelling nut against a height stop moves a control rod which returns a manual control lever to its off position when a preset height is reached. The speed of raising or lowering the scenery bar can also be pre-set.

3,823,919
HOUSING FOR EQUIPMENT HAVING ROTATING TOOLS FOR TREATING LUMPY TO LIQUID MATERIALS

Karl Benedikter, Vienna, Austria, assignor to Patentanstalt Fur Neue Baustoffe, Vaduz, Liechtenstein

Filed Mar. 6, 1973, Ser. No. 338,521
Claims priority, application Austria, Mar. 9, 1972, 1969/72
Int. Cl. B01f *15/02*; B02c *13/00*
U.S. Cl. 259—2 9 Claims

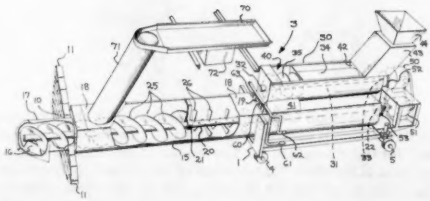


A housing for equipment having rotating tools for treating lumpy to liquid materials comprises an inner peripheral wall which surrounds and is spaced from the flight circle of said rotating tools, an outer peripheral wall which surrounds said inner wall, two end walls, which cover the tools in front and at the rear, respectively, said end walls and said inner peripheral wall confining a working chamber, in which said rotating tools are carried by a drivable shaft, which axially extends into the working chamber, said tools being adapted to move the material to be treated outwardly and to treat said material in said chamber, said working chamber having a centrally opening inlet and an outlet which extends outwardly adjacent to said inner peripheral wall, and means for discharging the treated material from the working chamber through said outlet, said means comprising a revolving endless belt, which forms at least a portion of said inner peripheral wall of the housing and extends out of said working chamber of the housing outwardly through said outlet.

3,823,920
FEEDING WET GLASS BATCH

Harry N. Mills, Toledo, Ohio, and Henry E. Roll, Waco, Tex., assignors to Owens-Illinois, Inc., Toledo, Ohio, by said Mills

Division of Ser. No. 114,917, Feb. 12, 1971, Pat. No. 3,725,022. This application Oct. 24, 1972, Ser. No. 300,172
Int. Cl. B01f *7/04*; F27d *3/08, 3/16*
U.S. Cl. 259—10 5 Claims



Method and apparatus for controllably and homogeneously combining and controllably feeding preselected amounts of a homogeneous blended mass of liquid and dry glass batch materials into a glass melting furnace. The foregoing is ef-

fected by the use of a mixing and feeding device which employs a paddle blade mixing and conveying device which communicates with a screw conveyor device in a common chamber into which the liquid and dry materials are independently introduced.

3,823,921

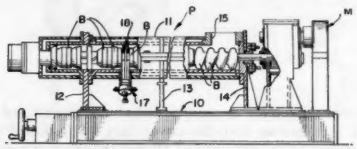
CONTINUOUS PROCESSOR FOR TREATING MATERIAL

Ambrose K. Brennan, Jr., Thomasville, and Michael J. Lewis, Felton, both of Pa., assignors to Teledyne, Inc., York, Pa

Filed Nov. 14, 1972, Ser. No. 306,296

Int. Cl. B01f *7/08*

U.S. Cl. 259—192 **14 Claims**



A continuous processor for treating material comprising elongate tubular chamber means, inlet means at one end of said chamber means for introducing a material into the chamber means, outlet means at the other end of the chamber means for discharging material from the chamber means, means in said chamber means for treating material therein and for causing the material to flow from the inlet to the outlet, and adjustable restrictor means in said chamber means between the ends thereof for regulating the flow of material through said chamber means.

3,823,922

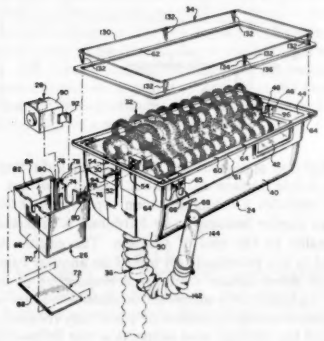
HUMIDIFIER

Elmer J. McElreath, Northbrook, Ill., assignor to Ultimatic Products, Inc., Rosemont, Ill.

Filed Mar. 25, 1971, Ser. No. 128,351

Int. Cl. B01f *3/04*

U.S. Cl. 261—92 **8 Claims**



A humidifier adapted for mounting on an air conduit to add water vapor to air flowing through the conduit. The humidifier includes a flexible resilient plastic tank for holding water. A plurality of screen discs is rotatably mounted in the tank. Each of the discs has a plurality of holes, which holes are aligned to allow air to flow through the discs. The discs are rotated by a motor to pick up water in the tank and place the water in an air stream. The tank is secured to an air conduit by a frame which has a plurality of fingers which extend through apertures in the tank. Wedges in the fingers hold the tank in position. The tank has a hose connected to its bottom to provide a drain for the tank. A transparent tube is connected to one end of the hose, which tube acts as a sight glass for the tank when the tube is mounted in a stored position and through which the tank may be drained when the tube and hose are lowered. The tank also has a pair of windows near the upper portion thereof to allow inspection of the interior of the tank while the humidifier is in operation.

3,823,923

DEVICE AND APPARATUS FOR TREATING LIQUIDS SUCH AS DRINKING WATER AND WASTE WATER

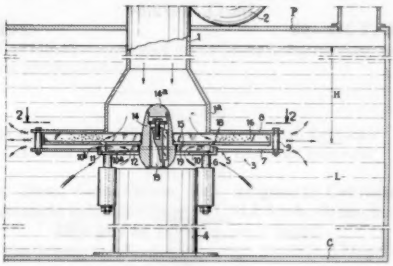
Paul Chapsal, Colombes, France, assignor to Trailigaz-Societe Industrielle du Traitement des Liquides et des Gaz, La Courneuve, France

Filed Jan. 11, 1972, Ser. No. 216,951

Claims priority, application France, Mar. 16, 1971, 71.09193

Int. Cl. B01d *47/18*

U.S. Cl. 261—93 **10 Claims**



Device for treating a liquid and in particular drinking water or waste waters. The device comprises a tube which is immersed in the liquid in a tank and communicates at its upper end with treating gas-supply means. A diffuser having radial vanes fixed to a rotating disc communicates with the lower end of the tube. A pump disposed under and coaxial with the diffuser pumps the liquid from the tank through passages in the disc into chambers defined by the vanes so as to form in the chambers an emulsion of the gas and liquid which is thereafter ejected into the liquid in the tank.

3,823,924

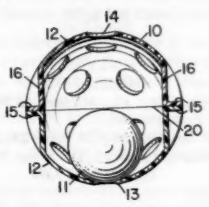
FILTER DEVICE

Harry E. Hoon, Jr., Strongsville, Ohio, assignor to Envirotech Corporation, Salt Lake City, Utah

Filed June 21, 1972, Ser. No. 264,809

Int. Cl. B01d *47/00*

U.S. Cl. 261—94 **2 Claims**



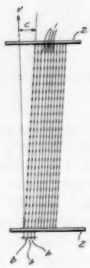
A filter unit for use in an apparatus for intercontacting fluid streams and comprising a hollow perforated spherical member

of polymeric plastic material having a solid spherical member disposed therein and freely movable with respect thereto. As applied to a separator in a dust collecting system the units are disposed within a bed of water flowing downwardly in the separator and are also subjected to a current of dust laden air moving upwardly through the bed and contacting the units. In such environment the units move upwardly through the bed of water under the action of the current of air until they reach the surface, where they become filled with water and then drop to the bottom of the bed of water where the water flows out and the cycle is repeated. Such movement of the units aids in the removal of material from the dust laden air.

3,823,925
PRISMATIC COOLING-ELEMENT ASSEMBLY FOR WATER-COOLING TOWERS

Niculae Cornel Balan, Cluj, Romania, assignor to Trustul de Constructii Industriale Cluj, Cluj, Romania

Filed Mar. 1, 1972, Ser. No. 230,555
Claims priority, application Romania, Mar. 12, 1971, 66237
Int. Cl. B01f 3/04
U.S. Cl. 261—98 **3 Claims**



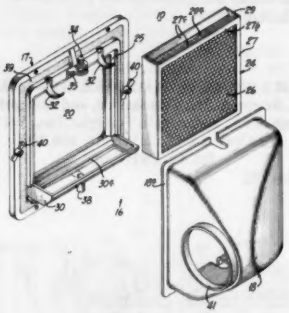
A cooling-element assembly for a water-cooling tower in which water droplets are dispersed over the entire length of the tower for contact with air passing between and through the elements. The assembly comprises a prismatic array of mutually parallel equispaced polyhedral nets of galvanized iron or synthetic-resin fiber held at their tops and bottoms by horizontally extending pairs of galvanized iron ropes to maintain an inclination of each net to the vertical.

3,823,926
HUMIDIFIER

Louis A. Bracich, Cary, Ill., assignor to Nu-Air Humidifier Corporation, Rosemont, Ill.

Continuation of Ser. No. 136,824, April 23, 1971, abandoned. This application June 21, 1973, Ser. No. 372,036
Int. Cl. B01f 3/04
U.S. Cl. 261—106 **3 Claims**

A humidifier apparatus is provided for use with a furnace system which includes means to circulate heated air. The humidifier apparatus includes a housing formed of a fixed frame member and a readily detachable cover member. The fixed frame member is adapted to be secured to an air conduit of a furnace system and mounts a filter pad or liquid-air contactor.

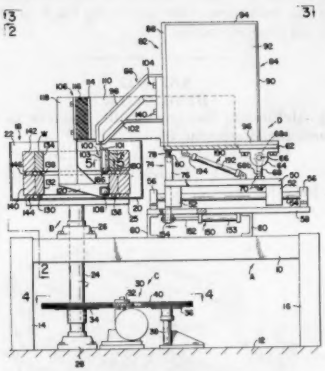


The cover member is readily detachably assembled to the frame member so that the cover may be removed without disturbance of the filter pad or other humidifier elements.

3,823,927
METHOD AND APPARATUS FOR HARDENING IRREGULAR INTERNAL SURFACES

Roger R. Budzinski, Cleveland, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Oct. 16, 1972, Ser. No. 297,938
Int. Cl. C21d 1/10
U.S. Cl. 266—5 EI **9 Claims**

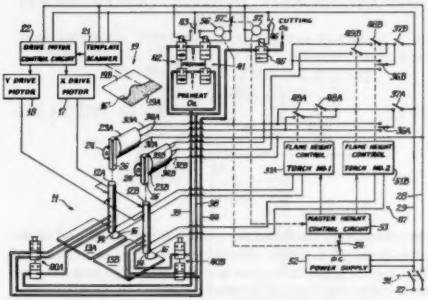


Method and apparatus are disclosed for induction hardening the inside surface of Wankel engine housings. The apparatus includes a rotatable, open top support container in which an engine housing to be hardened is disposed with its axis parallel to the axis of rotation. The engine housing is disposed in the receptacle on top of an annular cam element having an inner surface contour corresponding to that of the engine. An inductor is supported adjacent the inner surface of the engine housing by means of a laterally reciprocable carriage, and the carriage also supports a cam follower assembly including a follower roller. When the support receptacle is rotated the cam follower moves along the surface of the annular cam causing the carriage to reciprocate laterally relative to the axis of rotation of the support container so that the inductor is maintained the same distance from the inner surface of the engine housing as the housing rotates. The support container is rotated by a drive assembly such that a constant scanning rate between the inductor and inner surface of the engine housing is maintained.

3,823,928
TORCH HEIGHT CONTROL FOR FLAME CUTTING MACHINES

Billy L. Stolin, Manito, and Ronald D. Brown, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 1, 1972, Ser. No. 311,330
Int. Cl. B23k 7/10
U.S. Cl. 266—23 M 6 Claims



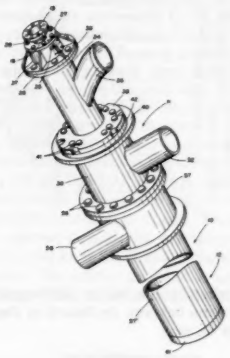
A flame cutting machine having motor means for traveling one or more gas operated cutting torches along one or more workpieces includes a flame height control for maintaining each torch at a predetermined precise spacing from the workpiece. The height control does not require any mechanical element extending between the torch and the workpiece to sense spacing and is insensitive to surface conditions of the workpiece. Torch to workpiece spacing is sensed at the point of contact of the flame with the workpiece rather than at an adjacent area. An electrical voltage is applied between each torch and the associated workpiece whereby the cutting flame constitutes an electrical resistor, the resistance of which is a function of torch to workpiece spacing. The voltage drop across each flame is continually compared with a predetermined selectable reference voltage indicative of desired torch to workpiece spacing and correction signals are generated when necessary to actuate a servomotor that restores the desired spacing of the torch and associated workpiece. Means are also provided for maintaining different torch to workpiece spacings for preheating and cutting stages of operation and for manually adjusting all torches jointly or any selected torch individually and further means disable the automatic flame height control system in response to a pronounced increase in the electrical resistance of any flame such as occurs if a torch passes off the edge of a workpiece.

3,823,929
NOZZLE FOR FUEL AND OXYGEN LANCE ASSEMBLY

Nicholas M. Rymarchyk, Pittsburgh, and Leo L. Meinert, Baden, both of Pa., assignors to Berry Metal Company, Harmony, Pa.

Filed Sept. 13, 1973, Ser. No. 396,912
Int. Cl. F27d 23/00
U.S. Cl. 266—34 L 8 Claims

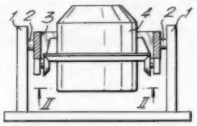
A lance for directing oxygen and fuel oil to a basic oxygen furnace includes a central fuel pipe, an insulating pipe around said fuel pipe, an oxygen pipe and water coolant pipes, all concentrically disposed. The central fuel pipe and insulating pipe have closed bottom walls and a plurality of relatively narrow fuel tubes are connected to bores in the bottom wall of the fuel tube, extend through the bottom wall of the insulating pipe and extend into three converging-diverging orifices. The narrow fuel tubes are supported in cantilever fashion and are concentric with each orifice.



3,823,930
SUPPORT AND DRAWING DEVICE FOR ROTARY CONVERTERS AND ROTARY CONVERTERS SO OBTAINED

Oscar Zinno, Genoa-Quinto, Italy, assignor to Costruzioni Meccaniche Industriali Genovesi C.M.I. S.p.A., Genoa, Italy

Filed July 20, 1972, Ser. No. 273,588
Claims priority, application Italy, Sept. 29, 1971, 12955/71
Int. Cl. C21c 5/50
U.S. Cl. 266—36 P 5 Claims



The invention aims to obtain a rotary converter about a vertical axis at high speed (70–100 turns per minute) for large quantities of steel per cast operation, said rotary converter though being of simple construction and sure working.

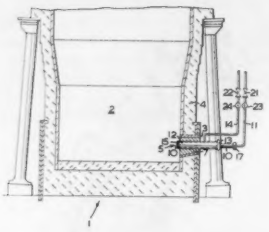
3,823,931
TAPPING OF A BLAST FURNACE

William Wells, and Derek W. R. Haysom, both of Sydney, Nova Scotia, Canada, assignors to Sydney Steel Corporation, Sydney, Nova Scotia, Canada

Filed Nov. 20, 1972, Ser. No. 307,954
Claims priority, application Canada, Oct. 25, 1972, 154796
Int. Cl. C21b 7/12
U.S. Cl. 266—42 6 Claims

The use of a tuyere comprising an inner tube and an outer tube spaced from the inner tube and preferably coaxial therewith, a gas being passed through the inner tube and a hydrocarbon fuel such as propane, being passed through the outer tube, in tapping a metal refining furnace, particularly a

blast furnace. The tuyere is cemented in a tapping notch and at the selected tapping time the hydrocarbon fuel flow is reduced and preferably stopped, oxygen being passed through



the inner tube whereby the tuyere disintegrates providing direct communication between the hearth of the furnace and the exterior of the furnace.

3,823,932

VEHICLE SEAT SUSPENSION WITH VARIABLE SPRING RATE

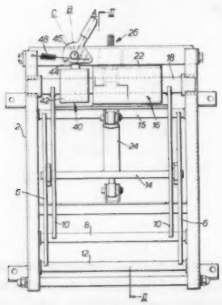
Allison K. Simons, Northampton, England, assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 24, 1972, Ser. No. 309,571

Claims priority, application Great Britain, Nov. 27, 1971, 55164/71

Int. Cl. F16f *5/00*

U.S. Cl. 267—133 **9 Claims**



Seat suspension system for tractors, trucks and other vehicles includes a pair of rubber torsion springs and a mechanism for selectively connecting or disconnecting one of the springs from operation with the other. In one embodiment the springs are selectively connectable in parallel to increase the total spring rate and in a second embodiment the springs are selectively connectable in series to decrease the spring rate. In both embodiments, one of the springs can be adjustably preloaded to adjust the seat's "ride" position for a particular operator. The variable spring rate feature permits either light or heavy operators to experience a good ride. It also permits the suspension to be tailored to the terrain so as to provide a stiff suspension for bumpy terrain and a light suspension for smooth terrain. Either embodiment can be set to automatically become stiffer when seat movement reaches a predetermined level.

3,823,933

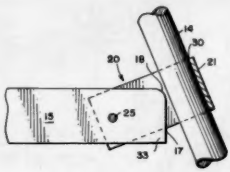
ADJUSTMENT APPARATUS FOR STIRRUP ASSEMBLY INCLUDING ROTATING CLAMP BRACKET

Floyd F. Mueller, Two Rivers, and Clarence J. Aulik, Manitowoc, both of Wis., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 5, 1973, Ser. No. 329,378

Int. Cl. A61g *13/00*

U.S. Cl. 269—328 **7 Claims**



A mechanism is disclosed for permitting vertical and angular adjustment of a stirrup assembly located at either side of the foot end of a medical examination table. The assembly includes a clamping bracket pivotally secured to a horizontally extending extension bar. When the bracket is in a lowered position, it clamps the stirrup support rod and fixes the position of the stirrup assembly. When the bracket is raised, either by raising the bracket itself or by pulling the stirrup assembly, the stirrup support rod is released and the stirrup assembly may be adjusted.

3,823,934

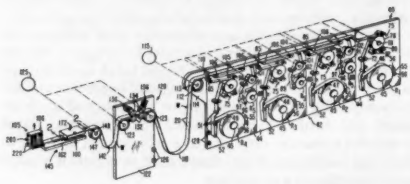
PRODUCTION OF MULTIPLE-COPY BUSINESS FORMS

Frank V. Parenti, Dayton; Paul C. Abney, Montgomery County, and George R. Spaleny, Dayton, all of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed Nov. 3, 1971, Ser. No. 195,231

Int. Cl. B65h *39/16*

U.S. Cl. 270—18 **6 Claims**



A plurality of rolls of paper webs and rolls of carbon transfer webs are mounted on corresponding spindles which are cantileverly supported in tandem arrangement by an upright frame. Each paper supply roll is rotated by a constant pressure feed belt, and each paper web is fed upwardly from its supply roll through a corresponding punch unit which forms laterally spaced control holes and U-shaped cuts in the web at longitudinally spaced intervals. Each paper web is then fed upwardly through a corresponding multiple color print unit which successively prints formats on the web. Each carbon web is fed upwardly from its supply roll by a suction drum and passes through a corresponding punch unit which forms longitudinally spaced thumb notches and glue transfer holes in the web in addition to a set of control holes. The carbon webs are then collated with the printed paper webs which are secured together by glue spots projecting through the transfer holes in the carbon webs. The web assembly is then fed through a unit which prints consecutive numbers on the

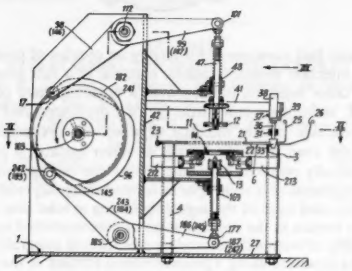
printed forms and then through a device which simultaneously prepunches each form and sizes the form to length. The web assembly then feeds into another device which completely severs each form and feeds it upwardly into the bottom of a stack so that the consecutive numbers increase in a direction from the top of the stack toward the bottom.

3,823,935

MACHINE FOR TURNING-IN THE EDGE OF A PIECE OF FLEXIBLE SHEET MATERIAL, ESPECIALLY A TEXTILE FABRIC

Jean Guichard, Yerres, France, assignor to Centre D'Etudes Techniques Des Industries De L'Habillement, Paris, France

Filed Mar. 22, 1972, Ser. No. 235,782
Int. Cl. B65h *45/00*
U.S. Cl. 270—61 R **13 Claims**



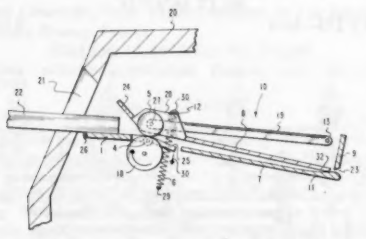
The machine comprises: a structural frame; a plate for supporting the piece of material with respect to said frame at least along the border to be turned-in; an insetting device adapted to fold at right angles the border to be turned-in by means of a movement in a direction at right angles to said plate; a folding-back device adapted to turn back in a flat position against the support plate the border of the piece of material which has already been folded at right angles, by means of a movement parallel to said plate; and means for displacing the support plate in its own plane in the direction of displacement of the folding-back device in order to free the turned-in piece of material.

3,823,936

RECORD CARD RECEIVING AND FEEDING APPARATUS

Frederick Fenn Quist, Jr., Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 4, 1972, Ser. No. 311,591
Int. Cl. B65h *3/06*
U.S. Cl. 271—118 **10 Claims**



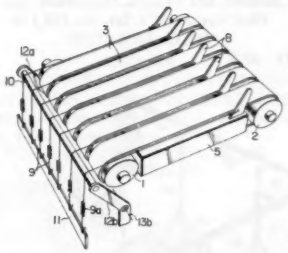
An apparatus for accepting a number of record cards and selectively feeding the cards, one at a time, to another station for operations such a reading and writing. In operation, an operator will insert the cards through an opening in the housing enclosing the apparatus. Beyond the opening in the housing is an expandable pressure throat made up of angularly extending wings integral with a rotatable card lifter and a rotatable pressure plate. With the stack of cards fully inserted and against a knife blade and guide, the stack is maintained intact by 1) a pressure roller connected to the pressure plate and forming part of the pressure throat, 2) card lifter rollers connected to the card lifter and forming another part of the pressure throat, and 3) the pressure plate itself forcing the stack against a baseplate carrying the card lifter. In the normal position a feed roller is spaced from the pressure roller, and is located on the same plane with the pressure and lifter rollers. The pressure plate is spring biased against the stack such that the stack is maintained intact in the vicinity of an exit throat and the entry throat. The feed roller is a continually rotating roller which is brought into contact with an outer card on the stack each time the card lifter is rotated. When this occurs, the outer card is ejected through the exit throat made up of an opening between the knife blade and a throat piece connected to the baseplate. Thereafter, the lifter is rotated back to its normal position and the cards are brought out of contact with the feed roller.

3,823,937

DEVICE FOR TEMPORARILY RENDERING A CONVEYED SHEET MATERIAL IMPERVIOUS TO THE ACTION OF CONVEYOR MEANS

Van Hirafuji, Atsugi, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,750
Claims priority, application Japan, Dec. 28, 1971, 46-36672
Int. Cl. B65h *5/02*
U.S. Cl. 271—276 **12 Claims**



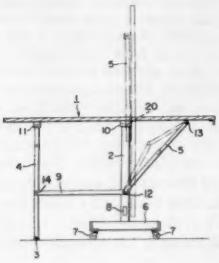
A device mounted above conveyor means comprising a plurality of endless belts trained over a plurality of belt rollers and a sheet suction box disposed between the upper and lower runs of the endless belts for conveying a sheet material placed on the conveyor means while the sheet is drawn by suction to the endless belts. The device comprises at least two sheet material lifting wires trained over the upper run of the endless belt means and aligned with the direction of rotation of the belt, and drive means controlled by drive control means for moving the sheet material lifting means between a stand-by position which is lower than the upper run of the endless belts and an operative position which is higher than the upper run of the endless belts. When in the stand-by position, the sheet material lifting wires permit contact of sheet material with the upper run of the endless belts so that the sheet material on the wires moves with the endless belts; when in the operative position, the wires are spaced apart from the upper run of the endless belts so that the sheet material on the wires is rendered impervious to the action of the conveyor means.

3,823,938

PING-PONG TABLE WITH SWING TOP BOARD

Yoshio Unno, No. 9-10-3D, 4-chome, Higashi Nakano, Tokyo, Japan

Filed Jan. 12, 1973, Ser. No. 322,935
Int. Cl. A63b 39/00
U.S. Cl. 273—30 6 Claims



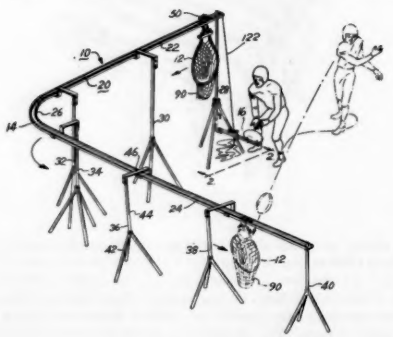
A Ping-pong table unit, forming one-half of a Ping-pong table and designed for use with an identical Ping-pong table unit to constitute a complete Ping-pong table, comprises a table top board pivotally mounted on main supporting legs forming an under frame provided with castors. Supplementary legs have respective adjusters on the lower ends thereof and their upper ends are pivotally connected to the lower surface of the top board. Connecting rods or links extend between the main legs and the supplementary legs, and folding link pairs connect the supporting main legs to the top board.

3,823,939

FOOTBALL PRACTICE APPARATUS

Richard D. Bottorff, 431 Victoria, Mishawaka, Ind. 46544

Filed Nov. 3, 1971, Ser. No. 195,119
Int. Cl. A63b 67/00
U.S. Cl. 273—55 R 9 Claims



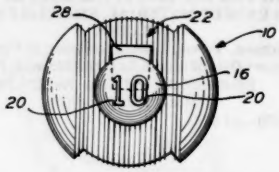
An apparatus for practicing football passing in which a carriage is mounted on an inclined track and supports a target consisting of a vertically positioned hoop with a net on the side opposite the passer for catching the ball tossed thereto as the target moves along the track. A control unit is preferably used which, while supporting the football, holds the carriage and target in their initial starting position on the track and releases them for movement down the track when the ball is removed from the control unit. The track is supported in an elevated position on standards and may be of rigid construction, or may consist of a rigid upper section and a flexible line lower section.

3,823,940

GAME BALL COMPONENT AND GAME BALL MADE THEREFROM

Charles J. Gentile, North Caldwell, N.J., assignor to Orange Products, Inc., Chatham, N.J.

Filed Oct. 1, 1973, Ser. No. 402,048
Int. Cl. A63b 37/00
U.S. Cl. 273—59 R 5 Claims



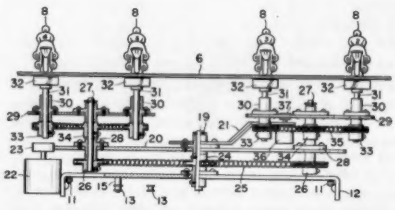
A game ball component for having an overlay of predetermined injection moldable plastic material of a first predetermined color injection molded over a predetermined portion thereof, including a core structure of a predetermined injection moldable plastic material of a second predetermined color, the core structure having an outer surface, a pair of diametrically opposed segments having the configuration of polar segments of a solid sphere formed integrally with core structure, and each of the segments having at least one cavity formed therein in the configuration of predetermined indicia, a plurality of outwardly extending ribs formed integrally with the core structure along a predetermined portion of the outer surface of the core structure, the ribs for being engaged by the overlay of predetermined injection moldable plastic material and for fusing with the overlay of predetermined injection moldable plastic material to structurally unite the game ball component with the overlay of predetermined injection moldable plastic material, and the core structure having a pair of passageways formed therein with each of the passageways communicating the outer surface of the core structure having the ribs formed thereon with the at least one cavity formed in one of the segments and the passageways for providing a flow path for the overlay of predetermined injection moldable plastic material to flow from the outer surface of the core structure into the cavities to fill the same; and a game ball made from such game ball component and the overlay of predetermined injection moldable plastic material.

3,823,941

DIVERSIFIED MOTION DEVICE IN A STEERING GAME AMUSEMENT MACHINE

Shikanosuke Ochi, Tokyo, and Norio Yasuda, Soka, both of Japan, assignors to Kabushiki Kaisha Sega Enterprises, Tokyo-to, Japan

Filed June 28, 1973, Ser. No. 374,653
Claims priority, application Japan, Dec. 31, 1972, 47-2823
Int. Cl. A63f 9/14
U.S. Cl. 273—86 B 8 Claims



In a steering game machine having a single controllable moving object placed upon an opaque surface to be moved

under the player's control in relation with the motion of several free moving objects also placed upon the opaque surface to be moved by magnetic attraction therethrough, a first disk is rotatably mounted on a carriage which can linearly reciprocate below the opaque surface. A pair of first revolvable shafts are mounted uprightly on the first disk, each rotatably supporting a respective second disk above the first disk. A pair of second revolvable shafts are mounted uprightly on each of the second disks, each of the second shafts carrying a magnet on its upper end. By means typically consisting of sprocket wheels and an endless chain, the aforesaid first shafts are caused to revolve only around the axis of the first disk but not on their own axes, and the second shafts are similarly caused to revolve only around the axis of each of the second disks but not on their own axes, so that the free moving objects are maintained in a predetermined direction while being moved in various ways by the magnets on the upper ends of the second shafts.

3,823,942

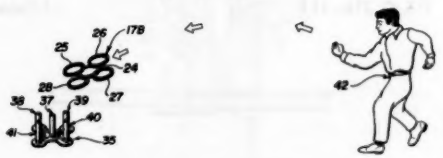
INTERCONNECTED HOOPS AND TARGETS

Aldred D. Duncan, Elmhurst, Ill., assignor to Duncanlite Laboratory, Inc., Villa Park, Ill.

Filed Dec. 4, 1972, Ser. No. 311,510

Int. Cl. A63b *71/02*

U.S. Cl. 273—100 **9 Claims**



Hoop games utilizing hoop assemblies intended to be pitched or thrown through the air toward a target where points are scored depending upon the engagement between the hoop assembly and the target. The hoop assembly may take the form of a plurality of hoops secured together in rigidly connected form or chain form and wherein the hoops may be of different colors. The hoops are molded of plastic. In one embodiment, sticks are provided for propelling the hoop assembly through the air, and in other embodiments, the hoop assembly is propelled through the air by being pitched or thrown by a player. The target may be in the form of sticks held by a player or in the form of stakes mounted on a ground or floor supported base.

3,823,943

PARLOUR GAME

Samuel Chamecki, Paris, France, assignor to Les Jouets Rationnels, Drancy, France

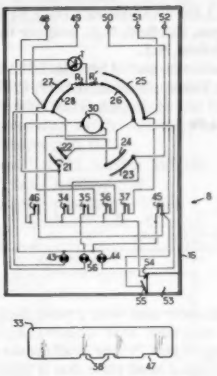
Filed July 19, 1972, Ser. No. 273,201

Claims priority, application France, July 21, 1971, 71.26719

Int. Cl. A63f *3/00*

U.S. Cl. 273—131 A **13 Claims**

A parlour game in which two opposing forces can be engaged in an imaginary action comprises a board representing a field of action and which is divided into a plurality of divisions. Two groups of elements, respectively representing the two opposing forces, are movable over divisions of the board, whereby elements of the two groups can be moved into range of each other to engage in an imaginary action. A simulator connected to the game has a plurality of probability representing segments, each associated with one of the two opposing forces. The segments represent probabilities which differ. A plurality of push button switches are connected respectively to each of the probability representing segments are provided for energizing specific ones of the segments in accord with and to total the probability of a given result for each of a pair of the engaged elements of the opposed forces. The push buttons are depressed to activate particular segments by one of a plurality of pattern cards, each of which represents a confrontation between particular opposing forces and carries a different pattern of notches. The notches register with particular push buttons to keep those push buttons from being depressed when the pattern card is positioned in a holder adjacent the buttons. A motor operated slidable contact is actuable for effecting a chance selection among the segments for determining and indicating the result of the engagement of the pair of elements. An automatic timer is provided for limiting the time available to the players of the game for moving the elements into engagement.



3,823,944

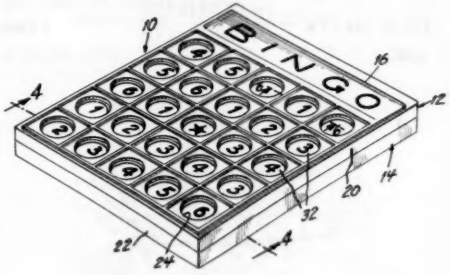
GAMEBOARD WITH TWO PLAYING SURFACES AND INDICATING DISCS SLIDABLE THEREBETWEEN

Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.

Filed Aug. 20, 1973, Ser. No. 389,837

Int. Cl. A63f *3/06*

U.S. Cl. 273—136 F **3 Claims**



A gameboard having two playing surfaces for the playing of "Bingo," "Lucky" and similar games and having a matrix of uniformly sized channels within which are positioned permanently attached slidable inserts. The inserts or markers, have indicia on opposed surfaces and the thickness of each of the inserts is less than the depth of the corresponding channel so that the insert may be manually urged from the flush posi-

tion with one face of the board to a recessed position flush with the opposite face of the board, thereby indicating the call of the number and also permitting the use of both sides of the board as alternate "Bingo" cards. In the play of the game, the "call" of the number is preferably intended to be accomplished with a chance selector which agitates dice to designate the proper column and number to be played by each of the players.

3,823,945

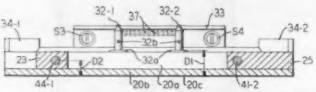
CONTROLLED TRANSPORT OF A FLEXIBLE MEDIUM

Lee J. Milligan, Fairfield, N.J., assignor to Peripheral Systems Corp., Fairfield, N.J.

Continuation-in-part of Ser. No. 159,502, July 2, 1971, abandoned. This application Nov. 29, 1971, Ser. No. 202,888

Int. Cl. G11b *5/00*

U.S. Cl. 360—96 **10 Claims**



A tape transport unit with a main deck plate that accommodates a magnetic tape cassette against two vertically disposed support pins. A tape head for the cassette is mounted on a spring loaded head plate that is slidably received by the main deck plate on two horizontally disposed support pins. The tape of the cassette is driven by being sandwiched between a drive capstan and a roller wheel of a pinch roller assembly that is pivotally mounted on the head plate and brought into engagement with the tape by a solenoid operated cantilever spring. The capstan is directly driven by a brushless motor for which the speed of operation is controlled electrically. The various constituents of the unit, including forward motion and rewind motors and solenoids for controlling the pinch roller assembly and the position of the main deck plate, are operated from motion control circuitry and accompanying circuitry that is used to sense the beginning and the end positions of the cassette tape.

3,823,946

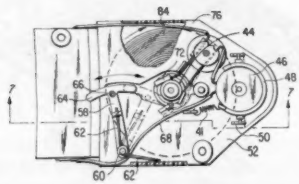
TOY GRAMOPHONE

Takamitsu Nakajima, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1973, Ser. No. 355,703

Int. Cl. G11b *3/00*

U.S. Cl. 274—9 R **6 Claims**



A gramophone for incorporation within a toy provided with a housing having a rotatably mounted door which may be opened and closed, as desired, a spindle reciprocably mounted to the door so as to normally extend into the housing, the spindle being provided with a continuous electrical contact at one end thereof, a turntable mounted on the spindle and an interchangeable sound disc supported thereon, a motor mounted within the housing and arranged such that the shaft thereof directly engages and drives the turntable, a pick-up arm provided with a platform within which is mounted a stylus, the arm normally being urged by a spring such that the stylus engages the sound disc at the beginning thereof, appropriate electrical means operatively connecting a source of energy to the motor, including a pair of electrical conductive prongs normally engaging the electrical contact of the spindle so as to complete the circuit, one of the prongs being positioned in the path of rotation of the platform such that when the stylus reaches the end of the sound disc the platform engages and pushes the prong away from the electrical contact of the spindle opening the circuit, a speaker cone mounted within the housing such that the platform of the arm makes sliding contact with the apex of the speaker cone during movement of the stylus across the sound disc and a manually operated actuating member for moving the reciprocably mounted sound disc and spindle toward the door of the housing thus disengaging the stylus from the grooves of the sound disc permitting the arm to return to its starting position.

3,823,947

MAGNETIC RECORDING TAPE

Minoru Sasaki, and Masana Uozumi, both of Ibaragi, Japan, assignors to Hitachi Maxell, Ltd., Ibaragi-shi, Osaka-fu, Japan

Filed Sept. 27, 1971, Ser. No. 183,795

Claims priority, application Japan, Sept. 25, 1970, 45-95293

Int. Cl. G11b *25/06*

U.S. Cl. 274—11 E **13 Claims**

A magnetic recording tape with a leader tape having one or both surfaces roughened so as to form small concave and convex portions therein. The leader tape is effective in removing the powder of the magnetic coating and dust from the capstan and the magnetic head of a magnetic recording and reproducing apparatus.

3,823,948

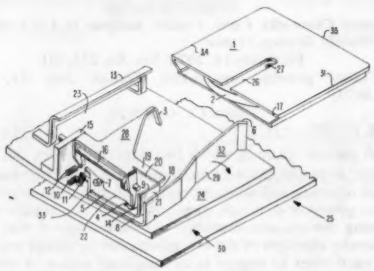
DISC UNLOADING APPARATUS

William Melchior Jenkins, Leander, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,272

Int. Cl. G11b *25/04*

U.S. Cl. 274—9 B **10 Claims**



An apparatus for unloading discs from a disc cartridge when the cartridge is inserted into an intake hopper, or loading sta-

tion, of a recorder, or the like. The apparatus is incorporated into the hopper and is generally defined by a cantilevered unloader and a cantilevered gate. When the cartridge is inserted into the hopper a first extent, the cantilevered gate is pivoted, enabling the remainder of the apparatus such that the discs in the cartridge can be engaged by the unloader. Complete insertion of the cartridge into the hopper will result in downward rotation of the unloader for engaging center openings in the discs. The unloader will then hold the discs in place in the hopper until the cartridge has been completely removed. Complete removal of the cartridge will allow the cantilevered gate to return to its normal position, causing the unloader to rotate in an upward direction and out of engagement with the discs.

3,823,949

SHAFT SEAL

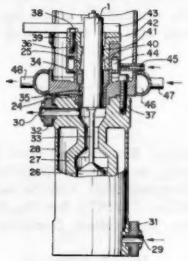
Leendert L. J. Derks, De Steeg, and Olav E. Koster, Arnhem, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

Filed Jan. 21, 1971, Ser. No. 108,491

Claims priority, application Netherlands, Jan. 29, 1970, 7001239

Int. Cl. F16j *15/40, 15/00*

U.S. Cl. 277—22 **3 Claims**



A means for sealing liquids under pressure is disclosed whereby the liquid itself is used as a sealant by cooling the liquid below its solidification point.

3,823,950

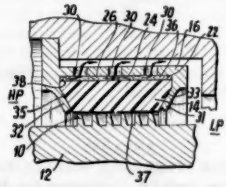
IMPROVED PRESSURE VENTED WEAR RING ASSEMBLY FOR USE IN ROTARY MACHINERY

Haakon O. Pedersen, Yardly, Pa., assignor to DeLaval Turbine, Inc., Trenton, N.J.

Filed Oct. 24, 1972, Ser. No. 299,852

Int. Cl. F16j *15/40*

U.S. Cl. 277—70 **16 Claims**



An improved, pressure vented, wear ring assembly is herein described for use in rotary machinery having a substantial axial pressure gradient. A rotor shaft contacting element, in the form of a plastic wear ring, is mounted in a holding member to extend generally co-axially about the axis of rotation of the rotor member. The holding member substantially encloses all but the rotor engaging portion of the wear ring and is formed with pressure relieving apertures, or exhaust ports, to release high pressure fluid, trapped between opposing surfaces of the wear ring and the holder, to a low pressure region. An intermediate ring or liner is interposed between the wear ring and the holder member, which intermediate ring comprises a porous, non-extrudable member having a relatively high compressive strength. The porous member is operable to direct the trapped high pressure fluid axially, radially and circumferentially of the wear ring, to the exhaust ports formed in the holder, while maintaining the wear ring in a properly aligned, operational posture.

3,823,951

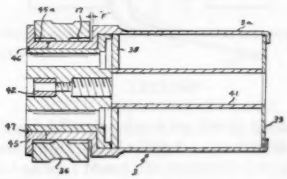
UNBONDED FLEXURE SEAL DESIGN

Phillip R. Eklund, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Sept. 7, 1972, Ser. No. 287,188

Int. Cl. F16j *15/32*

U.S. Cl. 277—208 **3 Claims**



A cryogenic compressor-displacer piston seal device consisting of an unbonded slip-on type flexure bushing member incorporating an inner lip in an interference fit and forming a small gas chamber with the piston, and a pair of outer lips in a line and slidable fit with the piston cylinder wall. Gas pressure directed into the small gas chamber deforms or flexes the flexure bushing seal member in an outward direction to force the outer lips thereof into a gas-tight relation with the cylinder wall. Radial expansion of the piston is automatically absorbed, and therefore compensated for by the inherent ability of the bushing member to simultaneously flex or deform therewith.

3,823,952

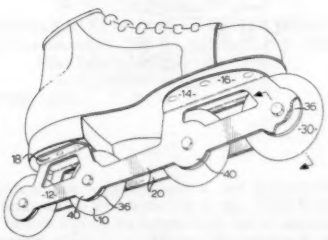
TANDEM WHEELED ROLLER SKATE

Adolph F. Kukulowicz, 801-Forest Manor, 10 Parkway Forest Dr., Willowdale, Ontario, Canada

Filed May 15, 1972, Ser. No. 253,500

Int. Cl. A63c *17/14*

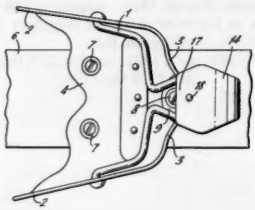
U.S. Cl. 280—11.2 **1 Claim**



A roller skate has wheels journalled in tandem and rubber-tired parallel coplanar solid sides for said wheels. The wheels are situated between enlarged annular press-plates stamped out of the wheel supporting structure, and floating friction

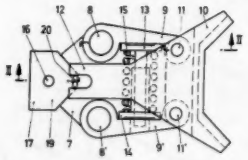
rings are provided between said solid sides and said pressure plates screw-threaded axles being provided to adjust the rotary resistance of said wheels and thereby provide leg strengthening exercize.

3,823,953
SKI BINDING OF THE TOE BINDING TYPE
Bror With, Jarlsborgveien 1, Oslo 3, Norway
Filed July 19, 1972, Ser. No. 273,131
Claims priority, application Norway, July 27, 1971, 2830/71
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 B 10 Claims



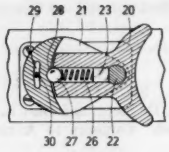
In ski bindings of the toe binding type having a clamping bail pivoted in the toe iron lugs for resiliently pressing the rim of the sole down it is proposed to mount a spring-loaded connecting link pivotaly on the bight portion of the bail and connect it releasably and adjustably to a forwardly facing toothing on fixed means on the ski in front of the boot, the link being shaped with an engaging hook. By exerting pressure on the link in front of its pivotal axis the bail is depressed and the link engaged, and by exerting pressure behind the said axis the link is released.

3,823,954
SKI BINDING
Willy Suhner, Aarauerstrasse 38, 5200 Brugg, Switzerland
Filed Sept. 28, 1972, Ser. No. 293,163
Claims priority, application Switzerland, Oct. 1, 1971, 14329/71
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 T 8 Claims



A ski binding has a boot-engaging unit a displaceable member of which can be mounted on a ski for turning movement relative to the latter about an upright axis to a release position. A sole engaging member is pivotally mounted on the displacing member and can move relative to the latter to and from a laterally displaced position. A latching arrangement utilizes a pawl which is also pivotable and can be moved to and from a latching position in which its bifurcated end portion embraces a deep end fixedly mounted on the ski.

3,823,955
RESILIENT ATTACHMENT FOR SKIS
Georges P. J. Solomon, 34, Avenue de Laverchy Annecy, Haute-Savoie, France
Division of Ser. No. 695,153, Jan. 2, 1968, Pat. No. 3,617,069.
This application Jan. 19, 1970, Ser. No. 8,155
Claims priority, application France, Jan. 4, 1967, 67.89992
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 4 Claims



A resilient attachment for skis in which the resilient function of the attachment is obtained by means of a resilient assembly including a spring that ensures safety locking of the attachment. One of the ends of the spring receives, either directly or not, the mechanical action that ensures resiliency and the other end acts on the locking device of the attachment.

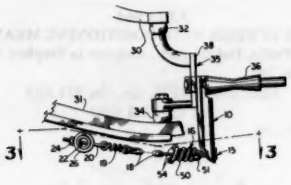
3,823,956
SKI
Hartwin Zechmeister, Munich, and Hans Zeilinger, Pucheim, both of Germany, assignors to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Munich, Germany
Filed Dec. 22, 1971, Ser. No. 210,915
Claims priority, application Germany, Dec. 22, 1970, 2063167
Int. Cl. A63c 5/12
U.S. Cl. 280—11.13 L 5 Claims

A ski made of plastic or metal and has a core of highly flexible preferably fibrous material.

3,823,957
STABILIZER FOR STEERABLE WHEELS OF A VEHICLE
Thomas M. Bishop, Tuck Rd., Cedartown, Ga. 30125
Filed Nov. 10, 1972, Ser. No. 305,563
Int. Cl. B60g 3/00
U.S. Cl. 280—94 3 Claims

A pair of stabilizers for vehicles exert inward forces on the steerable wheels of the vehicle. The stabilizers each include a plate fixed to the spindle of a steerable wheel, and springs are connected in series with each other and with a flexible con-

necting means between the plate and the frame of the vehicle. The springs can be placed in various arrangements in series



with the flexible connecting means and the assembly can be arranged to accommodate the contours of the vehicle's suspension system.

3,823,958

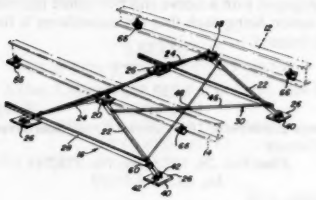
HOUSE TRAILER STABILIZER AND JACK SYSTEM

Earl A. Trejbal, Rt. 1, Sagle, Idaho 83860

Filed May 10, 1973, Ser. No. 358,938

Int. Cl. B60s *9/00*

U.S. Cl. 280—150.5 **8 Claims**



A stabilizer assembly is provided for use in pairs to be used in supporting and stabilizing the opposite ends of a house trailer or the like. Each assembly includes a pair of horizontally spaced first and second mounting brackets for securement to corresponding opposite side portions of a house trailer and a pair of downwardly divergent front and rear legs are provided on each mounting bracket and pivotally secured at their upper ends to the corresponding bracket for angular displacement about transverse axes extending between the mounting brackets. An elongated tension member extends between the lower ends of each pair of legs and is pivotally secured thereto with one end of the tension member and the corresponding bracket legs including structure operative to releasably establish the pivot connection therebetween at a selected point of a plurality of predetermined points spaced along the tension member. Further, diagonal bracing members extend and are secured between the opposite side legs of the stabilizer assembly.

3,823,959

TWO WHEEL DRIVE BICYCLE

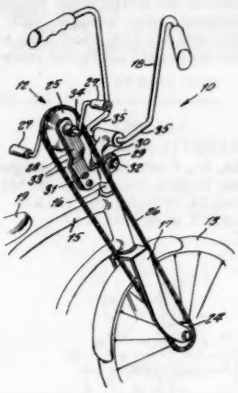
R. F. Winters, P.O. Box 123 Rouse Station, Covington, Ky. 41014

Filed Dec. 29, 1971, Ser. No. 213,689

Int. Cl. B62m *1/00*

U.S. Cl. 280—234 **1 Claim**

A bicycle which includes a frame supported at its rear on a rear wheel, the front of the frame being supported on a steering post supported on a front wheel; the rear wheel being powered or braked by a foot pedal unit, and the front wheel



being powered or braked by a hand pedal unit mounted on the steering post.

3,823,960

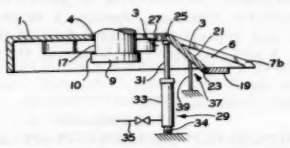
FIFTH WHEEL SAFETY LOCK

Jack L. Boggs, 1239 Chandler Ave., Akron, Ohio 44313

Filed Sept. 25, 1972, Ser. No. 292,180

Int. Cl. B62d *53/10*

U.S. Cl. 280—432 **15 Claims**



A safety lock to prevent unwanted disengagement of vehicles connected by a fifth wheel coupling comprising a bolt reciprocally mounted under the radially opening slot in a fifth wheel plate, pressurized fluid driven means connected between the leading vehicle's brake system and the bolt for raising the bolt into the slot and holding it in the slot during operation of the vehicles wherein the bolt is capable of abutting engagement with the king pin of the trailing vehicle upon longitudinal movement of the pin along the slot and means for preventing the bolt from being pushed longitudinally out of the opened end of the slot.

3,823,961

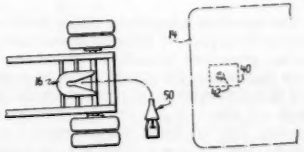
REMOVEABLE SAFETY PLUG FOR FIFTH WHEEL SLOT

Miklos B. Korodi, 440 E. 79th St., New York, N.Y. 10021

Filed Feb. 9, 1973, Ser. No. 331,287

Int. Cl. B62d *53/10*; **B60d** *1/12*

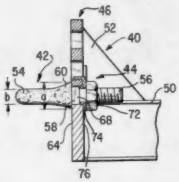
U.S. Cl. 280—432 **6 Claims**



A safety lock for forward insertion into the rearward-opening, kingpin-receiving slot of a conventional fifth wheel plate,

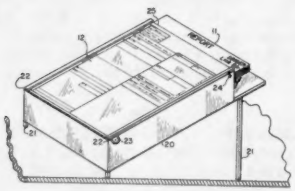
behind an associated kingpin, to block the kingpin-slot rearward of the kingpin and limit rearward movement of the latter in the even of failure of the conventional kingpin-latching structure. The abutment body includes latch structure releasably engageable with the fifth wheel plate to lock the abutment body within the kingpin slot against rearward movement therein.

3,823,962
LUNETTE ASSEMBLY
Raymond D. Martin, Jr., Centreville, Md., assignor to Centreville Tag-A-Long Trailers, Inc., Centreville, Md.
Filed Aug. 24, 1973, Ser. No. 391,474
Int. Cl. B60d *1/04, 1/14*
U.S. Cl. 280—514 **15 Claims**



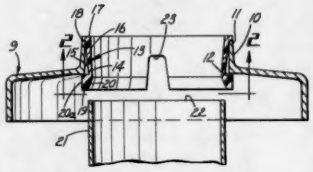
A lunette member having a forward eye portion, a rear shank, and an intermediate plug portion interconnecting the shank and the eye. The intermediate plug portion has a transverse cross sectional configuration of a square, and fits in a mating square through socket formed in a mounting member of a trailer tongue. The base of the eye portion is thickened in both transverse directions, forming a rearwardly facing shoulder that engages the forward face of the mounting member. A lock nut retains the lunette on the mounting assembly.

3,823,963
INFORMATION SEGREGATION APPARATUS
Thomas Fitzgerald, and Rebecca M. Edwards, both of Takoma Park, Md., assignors to The Singer Company, New York, N.Y.
Filed Dec. 17, 1969, Ser. No. 885,943
Int. Cl. B42d *15/00*
U.S. Cl. 283—66 **3 Claims**



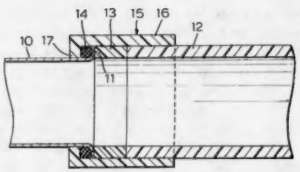
This invention comprises a simple device which serves as an overlay for reports or other document sources of information having prescribed formats. In abstracting information from such documents, the person performing the task must learn and then remember the order in which the information is to be used and where, in any particular format, the information is located. The overlay of this invention is a transparent sheet having areas thereon outlined to form boxes or bounded portions. When the sheet is placed over the document for which it was designed, the information which appears under each of the boxes is identified by appropriate instructions printed in the boxes so that an unskilled individual can properly abstract the desired information. Also included is a special container which permits the loading of a plurality of similar documents for use with a single overlay sheet, and the utilization of one document after another, without disturbing the overlay sheet.

3,823,964
ESCUTCHEON WITH POSITIONING MEANS
William E. Politz, Delphi, Ind., assignor to Stephen A. Young, Monticello, Ind.
Filed Jan. 5, 1973, Ser. No. 321,453
Int. Cl. F16l *5/00*
U.S. Cl. 285—46 **6 Claims**



There is disclosed escutcheon construction for use in conjunction with concealed plumbing fittings, and having grippings means of resilient form removably mounted therein, said gripping means including a taper area, notches related thereto and retaining means whereby the escutcheon may be slidingly engaged with a sleeve and positioned therealong, the gripping action being such that the escutcheon is firmly and uniformly located.

3,823,965
PIPE JOINT
John Ernest Emberson, 25 Dogwood Cres., Scarborough, Ontario, Canada
Filed Feb. 26, 1973, Ser. No. 373,741
Int. Cl. F16l *55/00*
U.S. Cl. 285—174 **7 Claims**

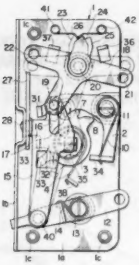


Metal pipes and plastic pipes are joined together by means of an outwardly flanged metal pipe section and a cylindrical plastic connecting member with an inward flange. The metal flange, on the end of the metal pipe section, is located within the cylindrical body portion of the connecting member, the two flanges cooperating to compress a sealing ring in between, with the body of the metal pipe protruding through the flange on the plastic member. A retaining ring fits snugly within the body portion of the connecting member, bears against the metal flange, and holds the joint in assembled position.

3,823,966
CLOSURE LATCH
Nozomu Torii, Hekinan, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan
Filed Oct. 24, 1972, Ser. No. 300,295
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **5 Claims**

A closure latch having a latch bolt movable between latched and unlatched positions, a detent for holding the bolt against

movement to the unlatched position, inside release means, outside release means, an intermittent member movable to any one of at least two positions for selectively coupling both the inside and outside release means to the detent in the first position of the intermittent member and coupling only the outside release means to the detent in the second position of



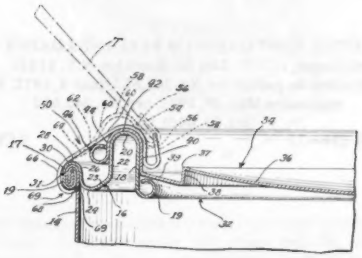
the intermittent member. The detent includes a member to shift the intermittent member upon shifting of the bolt caused by movement of the bolt toward the latched position whereby the intermittent member is automatically shifted to its second position without requiring the operator to exert any conscious effort when the door is closed.

3,823,967

CLIP FOR A CAN OR CONTAINER

Elmer J. Knize, Chicago, Ill., assignor to Lippy Can Co., Ltd., Chicago, Ill.

Filed Dec. 20, 1972, Ser. No. 316,770
Int. Cl. B65d *45/30*
U.S. Cl. 292—258 6 Claims



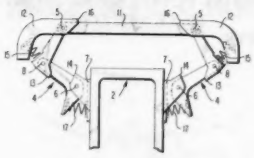
A clip for detachable securement to a lid and a can or container for the purpose of retaining said lid locked with respect to said container, said container having a rim having a generally inverted U-shaped portion extending inwardly of the wall of the body of the container and upwardly thereof, with a lid having an inverted U-shaped portion which seats over the correspondingly shaped portion of the rim and with the clip comprising an integrally formed strip shaped to form a U-shaped inner end and an inwardly turned outer end, with an intermediate humped portion. The clip is applied so that the inner leg of the U-shaped inner end tangentally engages the curved U-shaped portion of the lid and applies an inward and downward force or pressure against that portion of the lid to hold same in locked position relative to said rim.

3,823,968

ARRANGEMENT OF BUMPER IN MOTOR VEHICLES

Bela Barenyi, Maichingen, Germany, assignor to Daimler-Benz AG, Stuttgart, Germany

Filed Feb. 17, 1972, Ser. No. 227,133
Claims priority, application Germany, Feb. 8, 1971, 2107702
Int. Cl. B60r *19/06*
U.S. Cl. 293—84 15 Claims



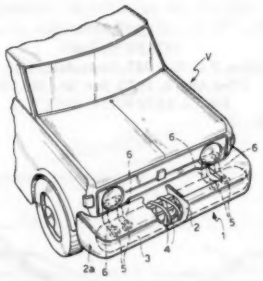
An arrangement of a bumper in vehicles, especially in motor vehicles, according to which the bumper is yieldingly supported at the support structure of the vehicle, such as the frame or chassis-frame, whereby the bumper is guided in the horizontal plane by scissor-like devices having vertical joints which are arranged between the support structure and the bumper.

3,823,969

PNEUMATIC SHOCK ABSORBING BUMPER

Richard Sapper, Stuttgart, Germany, and Sergio Marocco, Milan, Italy, assignors to Fiat Societe per Azioni and Industrie Pirelli S.p.A., Milan, Italy

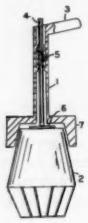
Filed Oct. 20, 1972, Ser. No. 299,573
Claims priority, application Italy, Oct. 25, 1971, 70490/71
Int. Cl. B60r *19/10, 21/02*; B61f *19/04*
U.S. Cl. 293—71 P 5 Claims



This invention provides a pneumatic collision guard for vehicles of the type comprising a flexible walled hollow body of inextensible material containing air under pressure. The hollow body has air discharge apertures which are normally closed but which are opened rapidly, for example by the breaking of brittle caps over the apertures when as a consequence of a collision, the deceleration of the vehicle or the deformation of the air filled body, reaches a given value cor-

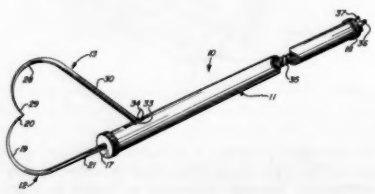
responding to the maximum acceptable deceleration, thereby limiting the reaction force imparted to the vehicle through the collision guard.

3,823,970
POLLUTION CONTROL DEVICE
William Brenner, 105 Neil Ct., Port Washington, N.Y. 11756, and Herbert Cooper, 1 Tony Point Ln., Port Washington, N.Y. 11050
Filed Oct. 19, 1972, Ser. No. 299,067
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 R **1 Claim**



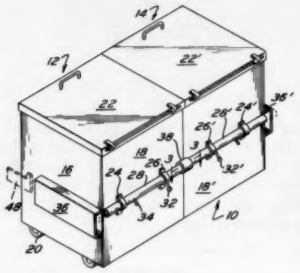
A containerization device for picking up material comprising a container, a handle to hold the container for positioning the container during the operation of the device. A releasing means is in the handle to enable efficient ejection of the container for disposal purposes. The container is adapted to fit into the handle for holding purposes and is configured to enable the container to entrap and collect various materials. The container is also designed to lock in the closed position when used so that the material is enclosed and may be stored or disposed of in an efficient and sanitary manner.

3,823,971
GAFF HOOK
Alvin C. Golden, P.O. Box 942, Scottsdale, Ariz. 85252
Filed Aug. 8, 1973, Ser. No. 386,703
Int. Cl. A01k *97/14*; **B65g** *7/12*
U.S. Cl. 294—26 **8 Claims**



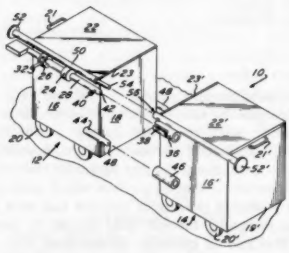
A fish landing implement comprising a pair of opposed gaff hooks which are secured in movable cooperating relationship to each other in a pole or handle for automatically imaling a fish on both sides of its body with gaff hooks by a simple manipulation of the pole.

3,823,972
REFUSE CONTAINER
Leonard Ramer, 1137 E. 24th St., Brooklyn, N.Y. 11210
Filed June 14, 1972, Ser. No. 262,857
Int. Cl. B65d *21/02*
U.S. Cl. 294—73 **10 Claims**



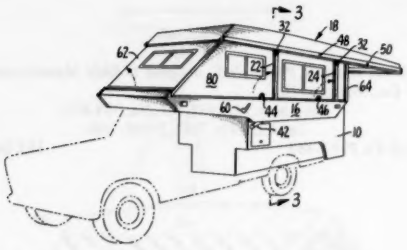
A refuse container of the type adapted to be lifted up by lifting tines on a front loader. Two or more containers may be removably coupled together so as to form one large container.

3,823,973
REFUSE CONTAINER FOR REAR END LOADER
Leonard Ramer, 1137 E. 24th St., Brooklyn, N.Y. 11210
Continuation-in-part of Ser. No. 262,857, June 4, 1972. This application Mar. 19, 1973, Ser. No. 342,651
Int. Cl. B65f *3/00*
U.S. Cl. 294—73 **9 Claims**



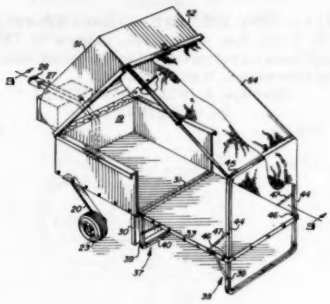
A refuse container of the type adapted to be lifted up by lifting tines on a rear loader. Two or more containers may be removably coupled together so as to form one large container.

3,823,974
FOLDING CAMPER
Le Roy K. Patnode, 920 Trout Gulch Rd., Aptos, Calif. 95003
Filed Jan. 22, 1973, Ser. No. 325,506
Int. Cl. B60p 3/34
U.S. Cl. 296—23 MC 4 Claims



A folding camper is described which is sturdy, light in weight and which can be erected easily by a single person. The structure permits maximum utilization of the space inside the camper.

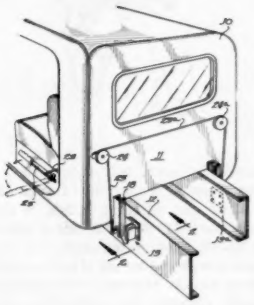
3,823,975
MOTORCYCLE TRAILER AND CAMPER
Gene W. Cooper, 915 E. Southern Ave., Phoenix, Ariz. 85040
Filed Aug. 20, 1973, Ser. No. 389,700
Int. Cl. B60r 7/02
U.S. Cl. 296—23 R 10 Claims



This specification discloses a trailer intended primarily for attachment to a motorcycle and which includes facilities which adapt it for use as a camper. The trailer comprises two box-like parts. The lower part consists of a bottom, side walls, a front wall and a tailgate. The upper box-like part comprises a top, side walls, a front wall, the lower edge of which is hingedly connected to the upper edge of the front wall of the lower part, and a rear wall. Seals are provided between the meeting edges of the side walls and the lower edge of the rear wall of the upper member and the tailgate. A platform is hingedly mounted on the rear edge of the bottom of the lower box-like member and carries two pairs of collapsible legs at the opposite ends thereof and a pivotally mounted vertical support. A pair of telescopic arms are pivotally mounted at the lower edge of the rear wall of the upper member and when extended are connected to the vertical support. A canopy in rolled form is stored in the upper member and when unfurled is secured in draped position over the extended telescopic arms and vertical support by snap fasteners.

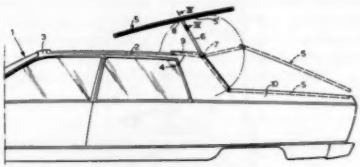
A pair of leaf springs are secured to the bottom of the lower member and carry wheels at their free ends. A tongue extends forwardly from the front wall of the lower member and carries a hitch at its front end. Cooperating elements of a detachable connection are mounted on the tongue and top wall of the upper member to hold the upper member in an upraised, inclined position relative to the bottom member.

3,823,976
LATCH MECHANISM
Russell G. McMillen, Fort Wayne, India, assignor to International Harvester Company, Chicago, Ill.
Filed May 1, 1972, Ser. No. 248,841
Int. Cl. B62d 27/06
U.S. Cl. 296—35 R 6 Claims



A latch mechanism for latching a movable body structure, such as a tilting truck cab, to a fixed body structure, such as a truck chassis, including a pivotally mounted latch lever engageable with a latch bracket, the latch lever being held in position by an over-center spring and adapted to be released by a lever-actuated cable attached thereto.

3,823,977
MOTOR VEHICLE BODYWORK WITH RIGID SUNSHINE ROOF
Leonardo Fioravanti, Moncalieri (Turin), Italy, assignor to Carrozzeria Peninfarina S.p.A., Turin, Italy
Filed Oct. 30, 1972, Ser. No. 301,924
Claims priority, application Italy, Nov. 3, 1971, 70604/71
Int. Cl. B60j 7/16
U.S. Cl. 296—137 B 2 Claims



A vehicle bodywork is provided with a rigid sunshine roof panel which, in accordance with this invention, extends almost the entire length of the roof and is connected to a rear cross member of the fixed roof structure by two pivoted rocker arms which can slide and rotate in longitudinal guides on each side of the roof panel, permitting the latter when released to be accommodated on the rear trunk lid of the vehicle, while allowing normal opening of said lid.

3,823,978

VEHICLE SEAT HARNESSES OR SAFETY BELTS

Ernest Baker Dove, Leigh-On-Sea, England, assignor to Teleflex Limited, Essex, England

Filed Feb. 8, 1973, Ser. No. 274,013

Claims priority, application Great Britain, July 23, 1971, 34792/71

Int. Cl. B60r 21/10; A60b 35/00

U.S. Cl. 297—388 7 Claims

A seat harness or safety belt comprising a first assembly adapted to be mounted at one side of a seat and including a first part of a two-part fastening buckle. A second assembly adapted to be mounted at the other side of the seat and including a spring-loaded webbing retracting reel which supplies a variable length of webbing having at its free end the other part of said fastening buckle. Manually releasable snubbing device which normally engages the webbing leaving the reel to restrain the webbing from movement into and out of said reel, said second assembly further includes a flexible stalk through which said webbing passes. The reel and the snubbing device being located at respective opposite ends of said stalk, said first assembly further includes a flexible stalk at one end of which is attached said first part of the fastening buckle.

3,823,979

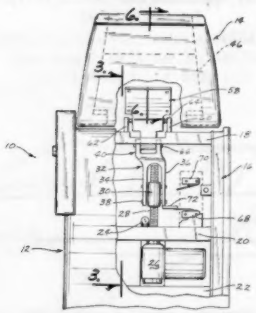
DENTAL CHAIR

Roderick W. Davis, Sr., Des Moines, Iowa, assignor to Den-Tal-Ez Mfg. Co., Des Moines, Iowa

Filed Jan. 11, 1973, Ser. No. 322,756

Int. Cl. A47c 1/02, 1/06, 1/12

U.S. Cl. 297—330 9 Claims



A dental chair comprising a seat portion having a back portion pivotally secured thereto. A lever element is secured at its upper end to the lower center portion of the back portion and is pivotally secured at its lower end to the rearward end of a clevis element. The lever element is pivotally secured, above its lower end, to the seat portion. The forward end of the clevis element is secured to a sleeve which is threaded onto the screw shaft of an electric motor for longitudinal movement thereon. Movement of the sleeve by the screw shaft causes the clevis element to act upon the lower end of the lever element thereby causing the lever element and the back portion to pivot about the pivotal connection of the lever element and the seat portion.

3,823,980

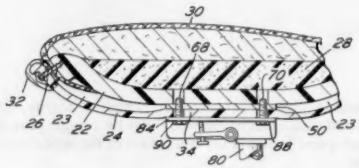
CHAIR

Robert Harnick, Parlin, N.J., assignor to Blair Manufacturing Co., Marietta, Ga.

Filed May 14, 1973, Ser. No. 359,819

Int. Cl. A47c 7/02, 23/00, 7/00

U.S. Cl. 297—455 11 Claims



A chair is disclosed having inner and outer shells joined together at the outer periphery with intermediate portions of the shell spaced from one another. The inner shell has padding secured to its upper surface over which lies a removable seat cover. A base is connected to a mounting plate which is disposed between the shells.

3,823,981

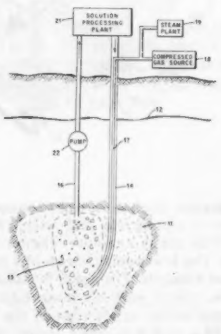
SITU LEACHING SOLVENT EXTRACTION-PROCESS

Arthur E. Lewis, Los Altos, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 4, 1973, Ser. No. 347,757

Int. Cl. E21b 43/28

U.S. Cl. 299—4 9 Claims



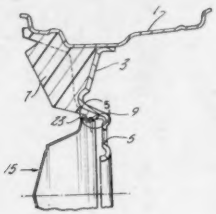
A nuclear explosive is detonated in an ore deposit below the water table to provide fragmented ore disposed in a nuclear chimney which serves as an in situ pressure vessel. The vessel is filled with water from external sources or by flow from the formation and oxidizing gas is bubbled through the ore to oxidize and dissolve metal values therein. An organic extractant solution is then contacted with the aqueous phase in the vessel and is circulated to the surface where the metal values are recovered therefrom. Following makeup the organic phase is recycled into the nuclear chimney.

3,823,982

HUB CAP FOR MOLDED VEHICLE WHEEL

Edward G. Spisak, Westland, Mich., assignor to S & S Product Engineering Service, Inc., Wyandotte, Mich.

Filed Aug. 2, 1973, Ser. No. 386,447
Int. Cl. B60b 7/04, 7/06
U.S. Cl. 301—37 P 4 Claims



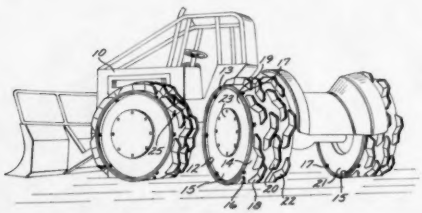
A wheel and cap combination has a metal tire rim and metal wheel disc having wheel attaching holes. An ornamental plastic cover is molded or bonded to the rim and disc radially outward of the holes. The plastic cover has a groove that receives spaced peripheral ribs formed on the annular flange of a cap that extends into the plastic cover. A boss formed on the plastic cover is located between the edges of a cutaway section of the annular flange to prevent relative rotation.

3,823,983

WHEEL CONSTRUCTION

William B. Peterson, 2750 E. Spring St., Long Beach, Calif. 90806

Filed Nov. 3, 1972, Ser. No. 303,333
Int. Cl. E01d 19/25; B60b 15/08
U.S. Cl. 301—43 4 Claims



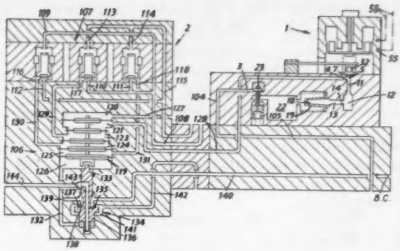
A wheel assembly is described which is usable with a vehicle such as a tractor or the like in compacting, spreading and dozing of rubbish, trash, refuse or garbage materials. The wheel assembly includes a steel, cylindrical rim which carries cleat means thereon in the form of radial projections disposed circumferentially about the wheel. Each projection comprises a major web which is aligned transversely to the direction of travel of the wheel with at least one gusset web dependent therefrom and oriented thereto at an obtuse angle in alignment with the direction of travel of the wheel. The webs are relatively thin in cross-section with a thickness of preferably about ⅜. The cleat means are disposed in two, three, four or more circumferential rows about the wheel. The wheel can have a hub and annular flange means extending from the hub to the substantially flat cylindrical rim or can comprise an open-ended drum adapted for mounting over the outer surface of a conventional pneumatic tire. In its preferred embodiment, the wheel comprises a plurality of circumferential rows of cleats, and each cleat has its major web aligned at about 45° to the direction of rotation of the wheel with a gusset web at each end thereof which is aligned substantially parallel to the direction of rotation of the wheel. The aforementioned construction provides a self-cleaning wheel which does not provide any intersticies, pockets or traps for the accumulation of dirt and debris, and the driving force of the tractor is sufficient to dislodge any dirt or debris from the wheel cleats.

3,823,984

BRAKING SYSTEMS

Maurice Parfitt, and Keith William Langley, both of London, England, assignors to Westinghouse Brake and Signal Company, Limited, London, England

Filed June 13, 1973, Ser. No. 369,543
Claims priority, application Great Britain, July 4, 1972, 31278/72
Int. Cl. B60t 13/74
U.S. Cl. 303—3 10 Claims



A braking system is proposed incorporating both a fluid-pressure controlled mechanical brake and an electric brake; the system having a source of fluid pressure, an output valve operative to derive from that source an output pressure which controls the degree of operation of the mechanical brake, a plurality of fluid-pressure responsive members operatively connected to the valve to operate the valve in accordance with the forces generated on the members by fluid pressures applied thereto and thus to derive said output pressure, a plurality of selectively-energisable electromagnetically-operated valves operable in accordance with their state of energisation to apply fluid-pressure to associated ones of the fluid-pressure responsive members accordingly to operate said output valve, a converter by which an electrical input signal indicative of the degree of effectiveness of the electric brake is converted into a fluid-pressure output signal the value of which corresponds to the value of the electrical input signal, and means for applying the fluid-pressure output signal of the converter to the stack of fluid-pressure responsive members, the output signal (when present) of the converter thus modifying the valve of the output pressure from the output valve derived by the selective energisation of the electromagnetically-operated valves from that which it would otherwise have been.

3,823,985

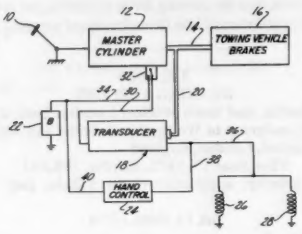
TRANSDUCER DEVICE FOR ELECTRICALLY OPERATED BRAKES

Harold C. Hubbard, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Jan. 12, 1973, Ser. No. 322,946
Int. Cl. B60t 13/66
U.S. Cl. 303—7 13 Claims

An electro-mechanical pressure responsive control system and apparatus for controlling the current supplied to the actuating coils of electric brakes of a towed vehicle. The control includes a transducer having a flexible bellows with a powdered magnetic material received therein which, when com-

pressed by foreshortening of the bellows due to operation of the brake system of a towing vehicle, decreases in electrical resistance and thereby supplies greater current to the brakes



of the towed vehicle, and vice versa. A magnetic field prevents the powdered material from becoming permanently compacted by repeated cycling of the bellows.

3,823,986

BRAKING DEVICE FOR RAILROAD VEHICLES

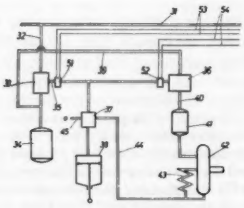
Hans Pollinger, and Erich Falke, both of Munich, Germany, assignors to Knorr-Bremse GmbH, Munich, Germany

Continuation-in-part of Ser. No. 882,847, Dec. 8, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,202

Claims priority, application Germany, Dec. 9, 1968, 1813469

Int. Cl. B60e *8/06*

U.S. Cl. 303—21 F **1 Claim**



A railway vehicle having a friction braking system has a hydrodynamic braking unit enclosed in a housing mounted in the vicinity of a wheel and axle supporting the vehicle. The rotor of the braking unit is drivingly connected to the axle and a control system introduces fluid into the braking unit to achieve a braking effect. A common control device is employed for actuating the friction braking means and the hydrodynamic braking unit. The control device includes an anti-skid device and also operates to render the hydrodynamic braking unit inoperative when the vehicle is traveling at a sufficiently low speed or when the friction braking means exerts only a light braking action.

3,823,987

AIR BRAKE ANTILOCK CONTROL

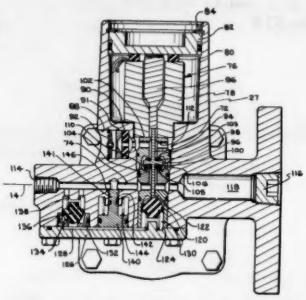
Sham L. Kurichh, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed June 18, 1973, Ser. No. 370,599

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 F **12 Claims**

An antilock control valve for use with an air brake system on a vehicle which also includes an antilock control system capable of detecting actual or potential locking of the braked wheels and providing a signal to actuate the antilock valve. The antilock valve provides for unrestricted operation of the brakes until a lock signal is received at which time the brakes are automatically released and further delivery of control air is



prevented until the braked wheels resume rotational speed. After the wheel lock condition is avoided, the brakes are reapplied at a controlled rate due to a restriction in the line delivery air for operation of the brakes.

3,823,988

ANTI-LOCK BRAKE SYSTEMS

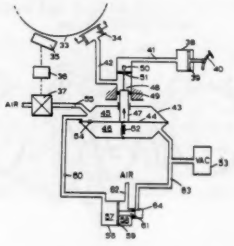
Derek Robert Skoyles, East Grinstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 43,157, June 3, 1970, Pat. No. 3,708,213. This application May 30, 1972, Ser. No. 257,961

Claims priority, application Great Britain, June 27, 1969, 32612/69; Aug. 6, 1969, 39417/69

Int. Cl. B60t *8/02*

U.S. Cl. 303—21 F **6 Claims**



An anti-lock vehicle brake system having a fluid pressure source for producing brake fluid under pressure at the wheel brake so as to apply braking pressure to the wheel in response to manual braking action by the operator. Also provided is a wheel movement sensing means for producing an output function in response to a related wheel rotational movement, and an anti-lock control valve actuatable in response to said output function and effective to divert brake fluid from the wheel brake so as to relieve braking pressure and thereby avoid wheel locking. A fail-safe arrangement is connected in the system for by-passing the anti-lock system in the event of malfunction of said anti-lock control valve so as to reapply full brake pressure to the wheel brake. The fail-safe arrangement includes a differential pressure member displaceable between a normal position and an operative position in response to a difference in fluid pressure acting on opposite ends thereof. Two different reference pressures act on different surface areas of the pressure member so that when the brake pressure falls to a critical low value the pressure member will be dis-

placed from its normal position to its operative position in which a by-pass connection is established and fluid pressure is permitted to increase at the brake to restore braking pressure as a result of fluid being passed through the actuated control valve.

3,823,989

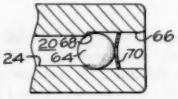
TRACK PIN WITH VENTED RUBBER PLUG

Roger L. Boggs; David John Balzer, both of East Peoria, and Melvin Haslett, Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 130,664, April 2, 1971, Pat. No. 3,762,778. This application Apr. 5, 1973, Ser. No. 348,064

Int. Cl. B62d *55/20*

U.S. Cl. 305—14 **2 Claims**



An improved method and apparatus are provided for sealing hollow pins which are commonly used as lubricant reservoirs in, e.g., track chain assemblies of crawler tractors, and linkage joints of earthmoving vehicles. One embodiment of the invention comprises a plug of elastomer material which has a lubricant passage axially therethrough, which passage receives an auxiliary plug means for the purpose of obturating the passage as well as causing radial expansion of the elastomer plug into positive engagement with a receiving axial bore in a hollow pin. The auxiliary expansion means takes the form of a screw, a spherical ball, or a headless plug employing a plurality of annular serrations. Another embodiment comprises a spherical ball which is received in a stepped, axial bore of a hollow pin and is retained therein by a Belleville washer. The invention facilitates refilling in the field of the lubricant reservoir contained within the pin.

3,823,990

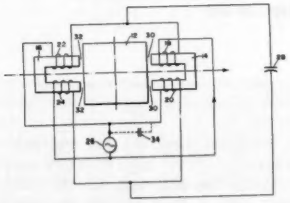
CAPACITIVE-INDUCTIVE BRIDGE TYPE ELECTRICAL SUSPENSION

Philip J. Gilinson, Jr., Chelmsford, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 10, 1972, Ser. No. 296,146

Int. Cl. F16c *39/06*

U.S. Cl. 308—10 **26 Claims**



An electrical suspension for positioning an element with respect to a frame of reference without mechanical connection to the reference. The suspension includes a bridge circuit having opposite bridge leg impedances vary together in response to the gap between an armature attached to the element and a stator attached to the reference frame. The bridge includes a diagonal impedance which acts to redistribute bridge current when the bridge impedances vary with displacement of the element from a centered position. The redistributed current results in an increased current flow through the legs corresponding to the increased gap and the increased current is used to create a restoring force on the element.

3,823,991

FRICTION BEARING

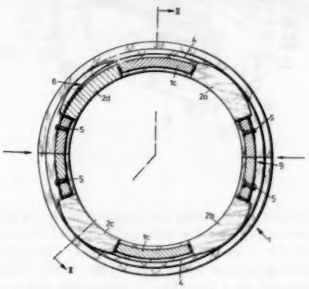
Heinrich Lamperski, Muhlhein, Germany, assignor to Glyco-Metall-Werke Daelen & Loos GmbH, Wiesbaden-Schierstein, Germany

Filed Sept. 28, 1972, Ser. No. 292,938

Claims priority, application Germany, Oct. 1, 1971, 2149207

Int. Cl. F16c *17/06*

U.S. Cl. 308—73 **4 Claims**



A friction bearing which comprises a housing and at least three radial segments arranged in a guiding cage and resting against the housing. Between the guiding cage and the radial segments on one hand and the housing on the other hand there is provided a lubricant receiving chamber, while between the guiding cage and the radial segments passages are provided for the passage of lubricant.

3,823,992

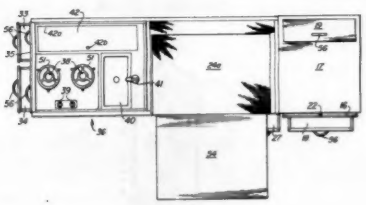
SLIDE-IN CAMPER UNIT

James C. Corbett, 83 E. Third Ave., Salt Lake City, Utah 84107

Filed Mar. 6, 1972, Ser. No. 232,108

Int. Cl. A47b *53/00, 77/08, 85/00*

U.S. Cl. 312—201 **8 Claims**



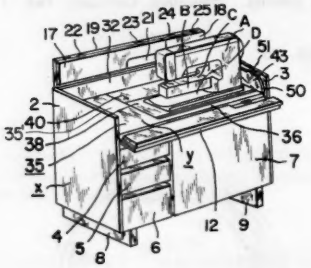
A slide-in fold up type camper unit that is easily installed in a truck trailer, van or like vehicle. The compact unit includes a food cooler, a slide-in stove and sink combination, and numerous storage drawers. The unit also includes an eating table and seat and a bed.

3,823,993

SEWING MACHINE

Ryoichi Kakishima, Yokohama, and Yutaka Nomoto, Tokyo, both of Japan, assignors to Riccar Sewing Machine Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1973, Ser. No. 327,481
Claims priority, application Japan, Jan. 31, 1972, 47-10516
Int. Cl. A47b 81/00, 57/00
U.S. Cl. 312—21 9 Claims



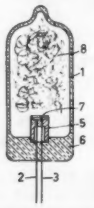
A cabinet box for housing and supporting a sewing machine of a free arm type, which is provided with a free arm projecting horizontally from the standing portion of the machine and used for sewing tubular pieces, etc. The cabinet box has a top cover composed of a plurality of elongated plates which are arranged in parallel with one another and connected pivotally so that they serve for a cover for completely closing the top portion of the cabinet and at the same time as a large area of a flat work support surface for sewing flat cloth in cooperation with the arm work support surface.

3,823,994

METHOD OF MAKING COMBUSTION FLASH BULB

Wilhelmus Polycarpus De Graaf, Emmasingel, Eindhoven, and Jacob Dirk Baars, Terneuzen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 13, 1973, Ser. No. 332,119
Claims priority, application Netherlands, Feb. 19, 1972, 7202213
Int. Cl. H01j 9/00; F21k 5/02
U.S. Cl. 316—26 9 Claims



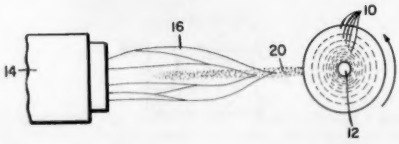
The ignition mass of combustion flash bulbs without an ignition wire is subjected to a breakdown by applying a relatively high voltage at the instant when it is in a vacuum or in an inert gas during manufacture. The finished bulb may be ignited by applying a voltage of between 10 and 100 V.

3,823,995

METHOD OF FORMING LIGHT FOCUSING FIBER WAVEGUIDE

Larry L. Carpenter, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,626
Int. Cl. G02b 5/14; C03b 23/20, 25/00
U.S. Cl. 350—96 WG 29 Claims



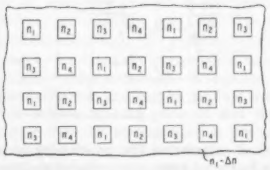
A method of forming an article such as a light focusing fiber waveguide by applying to a substantially cylindrical starting member a plurality of layers of material, each layer having a progressively lower index of refraction. The assembly so formed is heated and drawn to reduce the cross-sectional area to form a fiber having a stepped radially varying composition. Alternatively, a plurality of layers of material, each having a progressively higher index of refraction are applied to the inner surface of a tubular member. The resulting substantially cylindrical hollow assembly is heated and drawn to reduce the cross-sectional area and to collapse the remaining inner hole to form a fiber having a solid cross-sectional area with a stepped radially varying composition.

3,823,996

MULTICORE, MULTIMODE OPTICAL WAVE TRANSMISSION LINE

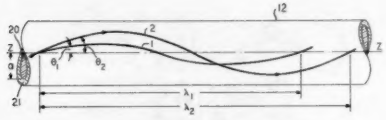
Rudolf Kompfner, Middletown, and Enrique Alfredo Jose Marcatili, Rumson, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1973, Ser. No. 348,158
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 7 Claims



This application describes a multimode optical wave transmission line comprising a plurality of single mode fibers. To minimize the delay dispersion, the propagation constants of adjacent pairs of fibers are made to be different.

3,823,997
GRADED-INDEX OPTICAL FIBER
Detlef Christoph Gloge, Red Bank, and Enrique Alfredo Jose Marcatili, Rumson, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed June 18, 1973, Ser. No. 370,948
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 9 Claims

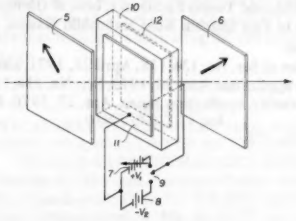


It is shown that minimum delay distortion is realized in a graded-index multimode optical fiber comprising an inner core of radius a surrounded by a suitable cladding when the refractive index $n(r)$, at any radius r less than a, is given by

$$n(r) = n_o [1 - 2\Delta(r/a)^{2-\alpha}]^{1/2},$$

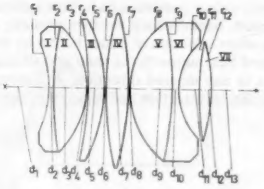
where n_o is the refractive index at the center of the fiber core, a is the core radius, n_c is the refractive index of the core at $r = a$, and $\Delta = n_o - n_c/n_o$. A variety of suitable claddings are described.

3,823,998
LIGHT VALVE
Takehito Yazaki; Keiichi Kanatani, and Sadao Sakamoto, all of Osaka, Japan, assignors to Sanyo Electric, Co., Ltd., Moriguchi-shi, Osaka-fu, Japan
Filed May 23, 1973, Ser. No. 363,300
Claims priority, application Japan, June 1, 1972, 47-54837; June 1, 1972, 47-54838
Int. Cl. G02f 1/26
U.S. Cl. 350—150 16 Claims



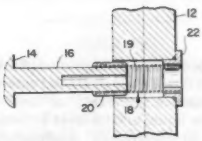
A light valve of the present invention comprises an oblique cut single crystal plate of strontium barium niobate (SBN), which is placed in a plane vertical to a light transmission; a plurality of transparent strip electrodes which are placed, at right intersections with each other, on the front and back surfaces of the plate; means for generating an electric field within the single crystal, in parallel with a light transmission direction, in a given region of the plate to be addressed by selectively providing an electric potential to these electrodes; an SBN single crystal plate of the same thickness and orientation, which is juxtaposed with the single crystal plate so that the optical axes of them may be at right angles to each other; and polarizers which are each provided in positions before and behind these both single crystal plates so that light polarization plane thereof may be at right angles to each other. In the light valve of the present invention, the SBN single crystal plate is operated as a longitudinal operation mode electro-optic material, and the birefringence shows a non-linear change and a hysteresis loop by a change in an applied electric field. The residual birefringence is used as an optical read/write memory. Also, a threshold of abrupt non-linear change region of the birefringence hysteresis loop may be used advantageously for selecting a voltage applied to the electrode, whereby cross-talk in addressing is avoided.

3,823,999
MAGNIFIER
Frits Johan Versteeg, Rotterdam, Netherlands, assignor to N. V. Optische Industrie, de Oude Delft, Delft, Netherlands
Filed Dec. 8, 1972, Ser. No. 313,331
Claims priority, application Netherlands, Jan. 14, 1972, 7200567
Int. Cl. G02b 25/04
U.S. Cl. 350—216 3 Claims



A magnifier for relative apertures exceeding $f/1$, an angular field larger than $2 \times 25°$ and a pupil distance larger than 0.9 for viewing the anode screen of an image intensifier tube, which forms part of a viewing device, which is mounted in a vehicle.

3,824,000
COILED SPRING MIRROR MOUNT FOR OPTICAL STABILIZER
Richard H. Burns, Webster, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 8, 1973, Ser. No. 321,894
Int. Cl. G02b 7/02
U.S. Cl. 350—245 7 Claims



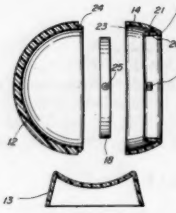
A device for mounting a stabilized optical element in a hydrostatic stabilizer cell utilizing a coiled, springy wire as the connection between the wall of the cell and the optical element.

3,824,001

COSMETIC MIRROR

Arthur Rosenberg, Evanston, Ill., assignor to Creative Concepts Corporation, Chicago, Ill.

Filed Mar. 29, 1973, Ser. No. 345,835
Int. Cl. G02b 5/08
U.S. Cl. 350—305 2 Claims



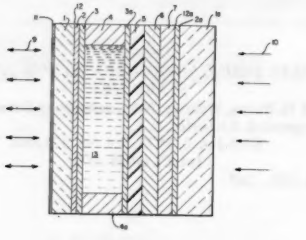
A cosmetic mirror comprising a hollow spherical shell and a pair of framed, back-to-back mirrors pivotally hinged within the shell to allow selection of either mirror by simple rotation. A cup-shaped base supports the shell and allows positioning of the mirrors in any desired direction. A distortable collar on the shell facilitates insertion and removal of the mirrors.

3,824,002

ALTERNATING CURRENT LIQUID CRYSTAL LIGHT VALUE

Terry D. Beard, Westlake Village, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 4, 1972, Ser. No. 312,097
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 11 Claims



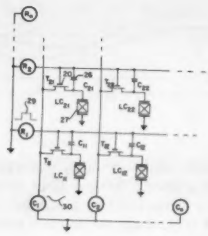
This invention is directed to improved photoactivated liquid crystal light valves or cells which exhibit extended lifetime. All electrically conductive elements of the light valve are separated from the liquid crystal layer by insulating layers. By thus separating all electrically conductive elements from direct contact with the liquid crystal layer, the life of the liquid crystal is significantly extended. To accomplish photoactivation in the presence of electrical insulating layers, the principle of impedance matching is applied to the photoconductor/liquid crystal combination. Three novel means of impedance matching are taught: 1) photoresponsive heterojunction; 2) low impedance liquid crystal; 3) metal grid.

3,824,003

LIQUID CRYSTAL DISPLAY PANEL

Nobuo J. Koda, Vista, and Lewis T. Lipton, Olivenhain, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed May 7, 1973, Ser. No. 358,259
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 6 Claims



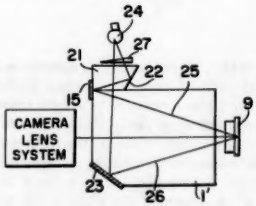
In a liquid crystal matrix display panel for line-at-a-time driving at TV rate, an array of field effect transistor switches enable inputs to respective storage capacitors thereby providing storage of signals for a sufficient time for the liquid crystal material to respond. The transistor's drain pad also serves as one plate of the associated storage capacitor and a portion of its gate electrode is effectively the second plate, thereby minimizing the number of drive lines required and facilitating the fabrication of a practical device using state-of-the-art thin film transistor technology.

3,824,004

COLOR SEPARATION PRISM FOR TELEVISION CAMERA

Yoshikazu Doi, and Toshio Kishikawa, both of Ohmiya, Japan, assignors to Fuji Shashin Koki Kabushiki Kaisha, Saitama-ken, Japan

Continuation of Ser. No. 136,118, April 21, 1971, abandoned.
This application Apr. 26, 1973, Ser. No. 354,793
Claims priority, application Japan, Apr. 27, 1970, 45-36072
Int. Cl. G02b 27/10
U.S. Cl. 350—173 6 Claims



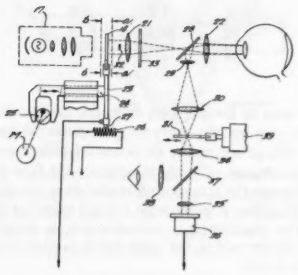
A color separation prism having a biased light source in a color television camera. This color separation prism further has a plurality of light reflecting surfaces, whereby the biased light from one light source is projected onto the photoelectric face of a pick up tube of the color television camera from a plurality of locations of the prism.

3,824,005

APPARATUS FOR REFRACTING EYES

John W. Woestman, Havertown, Pa., assignor to Joseph S. Zuritsky; Herman Zuritsky and Lee Zuritsky, all of Philadelphia, Pa., a part interest

Filed Mar. 28, 1973, Ser. No. 345,679
Int. Cl. A61b 3/10; G01n 21/46
U.S. Cl. 351—8 10 Claims



Apparatus is provided to project a pattern of bars of light through a lens system into a subject's eye. The reflection of the pattern from the retina of the eye is passed back through the lens of the eye and through a second pattern system to a detector. The pattern of bars of light is continuously moved back and forth axially of the subject's eye to bring the pattern into focus on the retina once during its travel from one extreme to another. The second pattern system through which the reflected pattern passes is similar to the pattern of the bars of light in that it has a series of slots corresponding in size and position to the bars of light of the first pattern. This second pattern is vibrated sideways at a rapid speed to chop the pattern of light reflected from the retina so that a modulated light image which rises to a peak each time the pattern of bars of light is in focus on the retina of the subject's eye is supplied to the detector. The detector transmits an electric signal corresponding to the intensity of light received by it to electronic circuitry which determines the position of the primary pattern when it is in focus on the retina of the subject's eye and provides a readout in diopters indicating the refractive state of the subject's eye.

3,824,006

OPTICAL SPECTACLES INCLUDING ADHESIVE BONDING MEANS BETWEEN METAL SPECTACLE FRAMES AND OPHTHALMIC LENSES

Franz Voit, No. 6, Talstrasse, Eutingen/Baden, Germany

Continuation-in-part of Ser. No. 818,245, April 22, 1969, abandoned. This application Nov. 24, 1971, Ser. No. 201,665
Claims priority, application Germany, Apr. 23, 1968, 1772266
Int. Cl. G02c 1/04, 13/00
U.S. Cl. 351—106 6 Claims

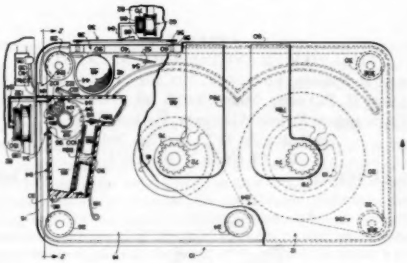
A pair of optical spectacles comprising metal frame parts and lenses of silicate glass bonded to the frame parts with a bonding agent and a method of producing same. The bonding agent is a heat curable material disposed between and in direct contact with the metal parts and lenses. The heat curable material comprises a low melting powder metal mixed with a heat curable eopxy resin adhesive having a hardener which provides a source of hydrogen. In a specific embodiment of the invention, the bonding agent is placed on the frame parts and lenses initially before the final bonding is effected between the parts. The bonding of the parts is effected by heating the combination thereof to a temperature of up to above 300° C. More specifically, the combination of the frame parts, lenses and bonding agent is heated to a temperature within a range of from about 200° C to about 300° C.

3,824,007

PHOTOGRAPHIC CASSETTE SYSTEM HAVING ROTARY CAPILLARY APPLICATOR OF PROCESSING FLUID

Joseph A. Stella, Peabody, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1972, Ser. No. 318,464
Int. Cl. G03c 1/00
U.S. Cl. 352—130 42 Claims



A multipurpose film handling cassette including an applicator system having processing fluid initially stored within a reservoir chamber. Extending between an interior of the chamber and the film is a, preferably cylindrical, applicator member having a plurality of capillary channels configured for conducting a metered amount of fluid to the film. In the preferred embodiment, the fluid is initially stored in a frangible pod, and the applicator cylinder includes a tang configured to tear open the pod and to subsequently cooperate with a stop so as to fixedly locate the channels in their functional location for fluid application. Tapered capillary channels are also disclosed which, responsive to variation in the rotational position of the cylinder, alter the rate of fluid flow to the film thereby permitting deposit of a uniform fluid layer on the film during non-uniform advancement of the latter.

3,824,008

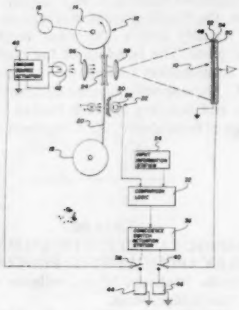
METHOD AND APPARATUS FOR CAPTURE AND RETENTION OF A TRANSIENT IMAGE

Homer A. Smith, Jr., Ontario, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 28, 1972, Ser. No. 276,195
Int. Cl. G03b 21/10
U.S. Cl. 353—26 11 Claims

Apparatus for retention of an image of a transient source on a photoconductor-liquid crystal display panel whereby the image may be captured and stored for observation over a longer period of time than would be available with the transient source alone. An illumination device for illuminating

the transient source and presenting the image thereof to the photoconductor-liquid crystal display panel is connected to an actuation system set to trigger the illumination device when



the transient source desired to be viewed is in proper position (or assumed to be in the proper position) with relation to the display panel to be imaged thereon.

3,824,009

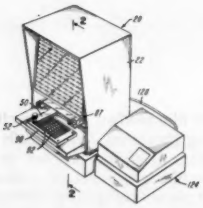
FILM VIEWER AND CONTROL APPARATUS

George R. Spaleny; Edward W. McCalley, both of Dayton, and James H. DeYoung, Miamisburgh, all of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Filed May 29, 1973, Ser. No. 364,229

Int. Cl. G03b *21/10, 23/08*

U.S. Cl. 353—27 **16 Claims**



Apparatus for viewing film, particularly microfilm, as the film is projected upon a screen, and for automatically controlling data collection mechanism in accordance with information carried upon a selected portion of the film. The apparatus includes means for establishing control circuitry, in accordance with a selected frame or page of an informational or data bearing film and in accordance with a selected item on the frame selected. The control circuit established may be employed to control the operation of any suitable data collection or data applicator mechanism.

3,824,010

ELECTROSTATIC MODULATOR FOR CONTROLLING FLOW OF CHARGED PARTICLES

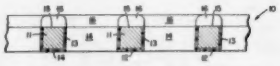
Gerald L. Pressman, San Jose, Calif., assignor to Electroprint, Inc., Palo Alto, Calif.

Division of Ser. No. 85,070, Oct. 29, 1970, Pat. No. 3,694,200. This application May 15, 1972, Ser. No. 283,781

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 R **3 Claims**

A system for controlling the flow of charged particles and for modulated aperture electrostatic printing. An apertured screen having substantially the entire surfaces formed of a dielectric material is charged with like charges over substantially all its surfaces to develop fringing fields in the apertures. The charge distributed across one side of the screen is selectively dissipated in accordance with a pattern to be reproduced thereby establishing a bipolar electrostatic latent image as a modification of the fringing fields for density control of a flow of charged particles directed through the screen.



The screen may be formed with dielectric thicker on one face than the other to initially carry a higher potential and provide a uniform charge inequality or potential difference through the screen apertures, oriented to enhance the flow of charged particles through the screen. Full modulation control of particle flow is therefore possible with a single selective charge dissipation. For electrostatic reproduction a print-receiving medium is interposed in the modulated particle flow passing through the screen.

3,824,011

TRANSFER PRINTING APPARATUS OF ELECTROPHOTOGRAPHIC APPARATUS

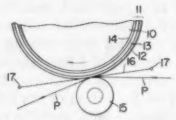
Ryuzo Suzuki, Tokyo-to; Seiichi Miyakawa, Nagareyama, and Masanori Watanabe, Tokyo-to, all of Japan, assignors to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed July 20, 1972, Ser. No. 273,425

Claims priority, application Japan, July 28, 1971, 46-57078; July 28, 1971, 46-57079

Int. Cl. G03g *15/00;* **G03b** *27/10, 27/32*

U.S. Cl. 355—3 **2 Claims**



In transfer printing apparatus of electrophotographic apparatus of the type wherein a receptor sheet is urged against a photosensitive element carried by a rotary drum by means of a transfer printing roller so as to transfer print an electrostatic latent image formed on the photosensitive element onto the receptor sheet there is provided a stationary separating member between the receptor sheet and the photosensitive element. Preferably, the separating member comprises a pair of strips which are disposed at an angle with respect to the direction of movement of the receptor sheet.

3,824,012

PROCESS AND APPARATUS FOR TRANSFERRING ELECTROSTATIC LATENT IMAGES IN ELECTROPHOTOGRAPHY

Isao Iizaka, and Toshio Yamamoto, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 8, 1973, Ser. No. 330,772

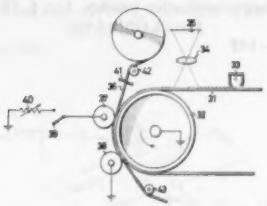
Claims priority, application Japan, Feb. 17, 1972, 47-16816; Feb. 21, 1972, 47-21364

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 R **13 Claims**

A dielectric layer of copy paper is brought into contact with an electrostatic latent image bearing surface of a photosensitive plate by a first roller having an electric resistance value

substantially higher than the rear face resistance value of the copy paper, the photosensitive plate having on its front face a dielectric layer for forming the latent image thereon and driven by a grounded roller. An electrically conductive lining element of the copy paper is substantially grounded by an



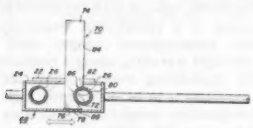
electrically conductive second roller to transfer the electrostatic latent image by air-breakdown discharge under the influence of the first and second rollers. The gap between the photosensitive plate and the copy paper has a width for air-breakdown discharge according to Paschen's law.

3,824,013

LIGHT SOURCE ALIGNMENT DEVICE

Wayne L. Kidd, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 7, 1972, Ser. No. 313,024
Int. Cl. G03b *27/54*
U.S. Cl. 355—67 **4 Claims**



A device in which an apertured, substantially cylindrical light source is aligned relative to the support thereof for providing a substantially optimum illumination profile therefrom.

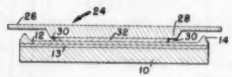
The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,824,014

RELIEF MASK FOR HIGH RESOLUTION PHOTOLITHOGRAPHY

Joseph L. Abita, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 26, 1973, Ser. No. 383,023
Int. Cl. G03b *27/62*; **B44d** *1/52*; **B05c** *11/16*
U.S. Cl. 355—75 **2 Claims**



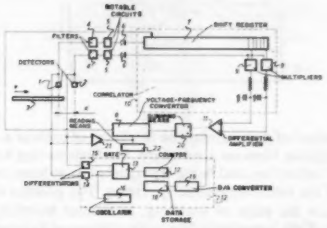
A mask comprising a mask pattern disposed on the planar surface of a raised mound extending from a flat backing plate, the invention insuring intimate contact between the mask pattern and a substrate surface to be masked even though said substrate surface may have an excess deposit of photoresist or other material around the perimeter thereof.

3,824,015

METHOD OF, AND APPARATUS FOR, THE OPTICAL MEASUREMENT OF THE SPEED AT A MOVING PRODUCT

Pierre Petit, Metz, and Pierre Verjux, Semecourt, both of France, assignors to Institut de Recherches de la Siderurgie Francaise(Irsid), St. Germain-en-laye, France

Filed Oct. 24, 1972, Ser. No. 300,161
Claims priority, application France, Oct. 3, 1972, 72.38963
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **6 Claims**



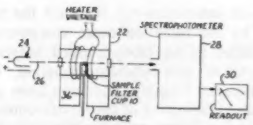
Two similar random time delayed signals representing common characteristics of moving discrete objects or products are picked up by detecting means arranged adjacent to the path of the objects and converted to digital signals. The digital signals are applied to a correlator provided with time delay means, the correlator generating two values of the correlation function of the two signals. These two values are compared to form a control signal for controlling the time delay means through a voltage frequency converter, the initial value of the time delay being fixed by means of a signal generated by an apparatus measuring the speed of the object extremity, said latter-named signal being applied to the input of the voltage frequency converter through summing means receiving the control signal of the time delaying means.

3,824,016

COMBINED SAMPLE COLLECTION AND VAPORIZATION SYSTEM FOR SPECTRO-CHEMICAL ANALYSIS

Ray A. Woodriff, 521 W. Grant St., and Jerome F. Lech, 305 N. Montana Ave., both of Bozeman, Mont. 59715

Filed June 16, 1972, Ser. No. 263,623
Int. Cl. G01j *3/30*
U.S. Cl. 356—85 **14 Claims**



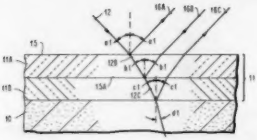
A porous spectroscopic sample holder is used for collection of a trace element in a fluid medium and the trace element is then vaporized directly from the sample holder. Measurement of the trace element is preferably accomplished by a nonflame atomic absorption method through electrothermal atomization.

3,824,017

METHOD OF DETERMINING THE THICKNESS OF CONTIGUOUS THIN FILMS ON A SUBSTRATE

George Tipton Galyon, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,804
Int. Cl. G01b 9/02
U.S. Cl. 356—108 13 Claims



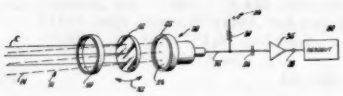
A method of determining the thickness of each of a plurality of contiguous films on a substrate, the films having known indices of refraction and being transparent to at least some portions of the electromagnetic spectrum. The process disclosed comprises the steps of scanning, at various wavelengths the surface of the composite film with a beam of light within the portion of the spectrum in which the films are transparent, and preferably at an angle of incidence greater than 0°. Either the incident or reflected beam is polarized (in a conventional manner) first in a plane either parallel or perpendicular to the plane of incidence and then in the other plane. The intensity of the reflected polarized beam in each of the perpendicular planes is then measured as the surface is scanned. A trace may then be made of the measured or observed intensity and wavelength and compared with a trace of calculated results of various intensity and wavelengths for various film thicknesses until an approximate coincidence is obtained between the trace of the observed measurements and the trace of the calculated results whereby the thickness of each of the films is established.

3,824,018

COHERENT LIGHT SOURCE DETECTOR

Robert Crane, Jr., Westport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Sept. 10, 1971, Ser. No. 179,439
Int. Cl. G01b 9/02
U.S. Cl. 356—112 3 Claims



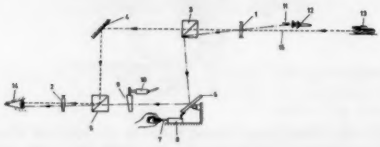
An unequal path interferometer, in which the two optical paths travelled by the radiation beam components before recombination differ by an amount much longer than the coherence lengths of non-coherent radiation, but much shorter than coherence length of radiation from a coherent source (e.g., a laser). Scanning of the interferometer so as to cause a change in the difference in the two optical paths will modulate the intensity of the recombined coherence radiation by varying interference effects, while the recombined non-coherent radiation can thus be detected in the presence of non-coherent radiation. When a Fabry-Perot etalon, for example, is gradually tilted to cause such changing of the optical path length difference, the resulting coherent radiation intensity modulation pattern also yields information as to the direction and wavelength of the coherent radiation source.

3,824,019

DEVICE FOR DETERMINING THE ANGLE BETWEEN TWO DIRECTIONS

Rolf Lennart Stalfors, Karlskoga, Sweden, assignor to AB Bofors, Bofors, Sweden

Filed Apr. 4, 1973, Ser. No. 347,760
Claims priority, application Sweden, Apr. 5, 1972, 4332/72
Int. Cl. G01c 1/00
U.S. Cl. 356—145 9 Claims



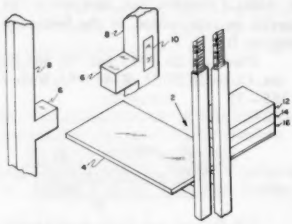
Apparatus for determining the angle between (a) the direction from the apparatus towards a first movable object provided with a light-emitting means and (b) the direction from the apparatus towards a point on a given second object. The apparatus includes means for dividing the light which enters the apparatus from both directions into two optical ray paths. A deflecting means is effective on the light travelling only along one of the ray paths and a further means provides a manifestation which is responsive to the magnitude of deflection of said one ray path by the deflecting means. In addition, a modulating means is provided which is effective on the light travelling along only one of the ray paths, such modulating means imparting to the light on such ray path a predetermined oscillatory motion at a preselected frequency. A viewing means provides superimposed images each respectively responsive to the light travelling along a respective one of the ray paths. The modulating means causes the preselected frequency of modulation to be sufficiently high to cause the respective corresponding image on said viewing means to be indistinct and to cause any given point on the object to be described as a specific pattern which is dependent upon the nature of the oscillatory motion while concurrently the image corresponding to the unmodulated ray path is distinct.

3,824,020

RETROREFLECTIVE FINE POSITION SENSING MEANS

Logan L. Pease, Bountiful, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 19, 1971, Ser. No. 200,486
Int. Cl. G01b 11/26
U.S. Cl. 356—152 9 Claims



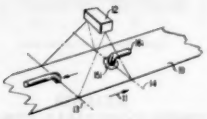
A position sensing method and apparatus for fine control of vehicles about a remote point comprising a strip of retroreflective material mounted adjacent the desired position and a plurality of sources of collimated light beams mounted on the vehicle together with means for sensing reflection of the light beams along the path of incidence.

3,824,021

REDUNDANT IMPERFECTION DETECTION SYSTEM FOR MATERIALS

Norman Nathan Axelrod, 809 S. Springfield Ave., Springfield, N.J. 07081, and John David Greiman, 25 Woodland Dr., Woodcliff Lake, N.J. 07675

Filed June 14, 1973, Ser. No. 370,149
Int. Cl. G01n *21/16*
U.S. Cl. 356—200 13 Claims



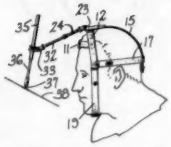
An optical inspection arrangement is organized to compare simultaneously corresponding unit sections of spaced linear widths of a material being transported along an axis. The resulting arrangement generates difference signals indicative only of imperfections. Variations due to patterns in the inspected material can be ignored thus leading to savings in information storage and processing costs.

3,824,022

THERAPEUTIC HEADGEAR DEVICE

Pasquale M. Mancino, 182 Beach Ave., East Haven, Conn. 29912

Filed Sept. 27, 1972, Ser. No. 292,744
Int. Cl. B43k *29/00*
U.S. Cl. 401—6 6 Claims



Manually handicapped persons are enabled to substitute for lack of manual dexterity by head movement control of implements attached to a headgear device. The headgear device has three arcuate semi-rigid bands and two adjustable straps interconnected to prevent undue horizontal and vertical movement of the device on the head. A support member is mounted on a band above the forehead. A rod is connected to the support member within view of the handicapped person. The implements are attachable to the rod and include a scribing instrument, an instrument for operating the keys of a typewriter, a pointer assembly, and a spotlight.

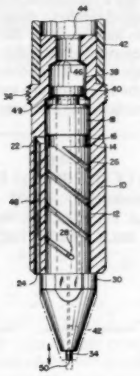
3,824,023

VENTING DEVICE FOR STYLOGRAPHIC PENS

William E. Danjczek; Jean Pierre Leuenberger, both of Easton; Fortunato J. Micale, and Ralph W. Wagner, both of Bethlehem, all of Pa., assignors to Koh-I-Noor Rapidograph, Inc., Bloomsburg, N.J.

Continuation-in-part of Ser. No. 185,020, Sept. 30, 1971, Pat. No. 3,741,668. This application June 21, 1973, Ser. No. 372,388
Int. Cl. B43k *8/00*
U.S. Cl. 401—258 4 Claims

A vent system for a tube writing pen wherein the vent consists of a longitudinally adjustable threaded stem extending within the writing fluid reservoir and venting at varying depths within the writing fluid. The upper end of the stem is open to



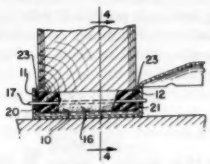
atmospheric pressure through a venting channel defined in the pen housing.

3,824,024

PAINT ROLLER

John F. Mason, Phoenix, Ariz.

Continuation-in-part of Ser. No. 158,705, July 1, 1971, abandoned. This application Nov. 15, 1972, Ser. No. 306,533
Int. Cl. B44d *3/28*
U.S. Cl. 401—193 1 Claim



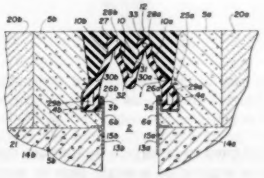
A unitary tray-handle paint roller for painting the bottom of doors without removing them from their hinges.

3,824,025

EXPANSION GAP SEALING DEVICE

Hans Beutler, Munich, Germany, assignor to Friedrich Maurer Soehne, Frankfurter Ring, Germany

Filed Apr. 19, 1972, Ser. No. 245,506
Int. Cl. E01c *11/12*
U.S. Cl. 404—48 16 Claims



The present sealing device for expansion gaps between adjacent structural members is connected to the side walls forming the gap by poured, hardening synthetic resin concrete. The

sealing strip proper is anchored in lost casing means embedded at least partially in said synthetic resin concrete. The lost casing means are formed so that the sealing strip proper may act as an anchor for a removable form body or core which is used to give the poured synthetic resin concrete the shape in which it is supposed to harden. Once the resin is hardened, the form body may be removed. Preferably, the sealing strip has an M-sectional shape or an inverted V-sectional shape whereby preferably the free ends are anchored to the lost casing and the tips are anchored to the form body.

3,824,026

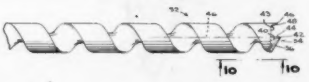
CUTTING LEAD TIPS FOR DRILL BITS

Thomas Gaskins, Palmdale, Fla. 33944

Filed Mar. 19, 1973, Ser. No. 342,381

Int. Cl. B23b *51/02*

U.S. Cl. 408—210 **22 Claims**



Improved drill bit lead end constructions which more particularly provide for sharp cutting lead or center point constructions to enhance the efficiency and effectiveness particularly of relative small diameter bits. The sharpened lead points include an axially disposed cutting edge which axially offsets a pair of inclined radial cutting edges which normally correspond to or are disposed upon the usual cone segment lips of a regular twist drill. One of the inclined radial cutting edges may be considered a hypotenuse relative to the axial cutting edge to thereby form a generally right triangular shape or profile to the lead end in some forms. Drill bits with these improved cutting lead ends provide at least a generally centering action while assuring essentially instantaneous cutting commencing from the initial contact of the drill bit with the material being drilled.

3,824,027

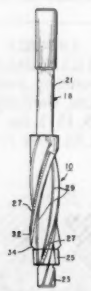
REAMER

John Janci, 1125 N. Karlov, Chicago, Ill. 60651

Filed July 25, 1973, Ser. No. 382,320

Int. Cl. B23b *51/10*

U.S. Cl. 408—225 **4 Claims**



A reamer adapted to be driven by a rotary machine to enlarge a hole in a plate in a single pass to accommodate a socket-head screw having a head portion and a shank portion with a single pass of the reamer, includes an elongated rodlike member having a rear end portion adapted to be attached to the machine, and a front non-cutting cylindrical portion having a diameter slightly less than the diameter of the hole to serve as a guide therein and having an axial length substantially less than the axial length of the hole. An intermediate enlarged cylindrical cutting portion has spirally-extending cutting edges thereon and spirally-extending material-guiding grooves therebetween, the diameter and the axial length of the intermediate portion being slightly larger than the corresponding diameter and axial length of the head portion of the screw to enlarge the hole to receive the head portion of the screw. A still further enlarged intermediate beveling portion is disposed to the rear of the cutting portion for shaping the plate surrounding the hole.

3,824,028

RADIAL BLOWER, ESPECIALLY FOR OIL BURNERS

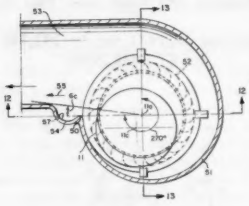
Kurt Zenkner, Ettlingen; Franz Kozel, Lippstadt, and Heike Thomsen, Schleswig, all of Germany, assignors to Punker GmbH Apparatebau und Warmetechnik, Eckernforde, Germany

Continuation-in-part of Ser. No. 874,756, Nov. 7, 1969, abandoned. This application Nov. 12, 1971, Ser. No. 198,294

Claims priority, application Germany, Nov. 7, 1968, 1807385

Int. Cl. F04d *17/08, 29/46*

U.S. Cl. 415—53 **5 Claims**



A radial blade fan for use in connection with burners, in which a fan rotor is surrounded by a volute casing so as to form a gap therewith and has a blade exit angle of at least 90° while the volute housing has an inlet nozzle, said nozzle and the axis of said rotor being so located relative to each other that at least portions thereof are eccentrically located with regard to each other. The said volute or spiral housing has a sharp bend in the region of the beginning point of the volute or spiral from which departs on the one side the volute or spiral and on the other side a transition or connecting piece to the fan outlet.

3,824,029

CENTRIFUGAL SUPERSONIC COMPRESSOR

Jean Fabri, Ville D'Avray; Jean Friberg, Bourg-la-Reine, and Raymond Siestrunck, Paris, all of France, assignors to Compagnie Industrielle Des Telecommunications Cit-Alcated, Paris, France

Filed Apr. 12, 1972, Ser. No. 243,371

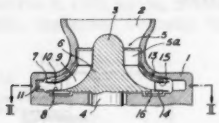
Claims priority, application France, Apr. 13, 1971, 71.12891

Int. Cl. F04d *17/00, 21/00, 29/42*

U.S. Cl. 415—109 **3 Claims**

A centrifugal supersonic compressor construction enables a high pressure ratio between the output and the input to be ob-

tained. This compressor comprises an axial input stator, a rotor provided with a rotating diffuser, and a fixed diffuser which is a volute extended by a nozzle rectilinear in section. The rotating diffuser of the rotor consists of two coaxial discs



connected together by radial blades, the radial dimensions of the blades and of the discs being such that the speed at the output of the diffuser rotating alone is slightly supersonic thereby obtaining a shock wave at the inlet of the nozzle.

3,824,030

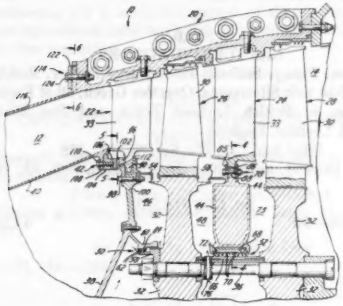
DIAPHRAGM AND LABYRINTH SEAL ASSEMBLY FOR GAS TURBINES

Angelo DeFeo, Passaic, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed July 30, 1973, Ser. No. 383,576

Int. Cl. F01d *25/24, 25/26;* **F02d** *7/20*

U.S. Cl. 415—136 **3 Claims**



The diaphragm member and labyrinth seal assembly for a gas turbine machine comprises an annular diaphragm or wall member disposed adjacent at least one of the rotor discs of a rotor blade assembly to define with the rotor disc a cooling fluid chamber. The chamber is in communication with a source of cooling fluid such as air, to receive cooling fluid from the latter. A labyrinth seal is disposed between the rotor blade assembly and the diaphragm member to provide a relatively fluid-tight joint between the stationary diaphragm member and the rotating rotor blade assembly. A slipjoint connecting means is disposed to connect together the diaphragm member to the turbine housing, which connecting means maintains concentricity of the diaphragm member and turbine housing and permits thermal differential movement of the diaphragm member and turbine housing without affecting the efficiency of the labyrinth seal.

3,824,031

TURBINE CASING FOR A GAS TURBINE ENGINE

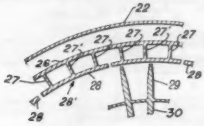
Ronald Albert Gilbert, Allestree, England, assignor to Rolls-Royce (1971) Limited, London, England

Filed Dec. 29, 1972, Ser. No. 319,763

Claims priority, application Great Britain, Jan. 12, 1972, 1365/72

Int. Cl. F01d *11/08, 25/14, 25/26*

U.S. Cl. 415—135 **8 Claims**



A turbine casing for a gas turbine comprises a casing defining the boundary of part of the turbine flow duct and formed from a plurality of segments, each segment being mounted from fixed structure by a plurality of radially extending struts. At least some of the struts are arranged to deform to allow relative thermal expansion between the hot segments and the supporting casing with at least one of the struts interposed between the deformable struts being relatively rigid.

3,824,032

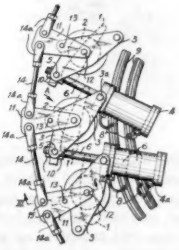
CONTROL APPARATUS FOR HYDRAULIC MACHINES

Gleb Stepanovich Schegolev, Sinyavinskaya ulitsa, 12/49, kv. 49; Mikhail Alexeevich Tsvetkov, Sinyavinskaya ulitsa, 26, kv. 64; Rady Kiriliovich Fasulati, ulitsa Tukhachevskogo, 55, kv. 23; Sergei Fomich Budnikov, Gerasimovskaya ulitsa, 12, kv. 91; Grigory Abramovich Bronovsky, 7 Sovetskaya ulitsa, 7, kv. 6, and Semen Abramovich Granovsky, Bolshoi prospekt, 77, kv. 3, all of Leningrad, U.S.S.R.

Filed Mar. 13, 1972, Ser. No. 234,231

Int. Cl. F01d *17/00*

U.S. Cl. 415—150 **1 Claim**



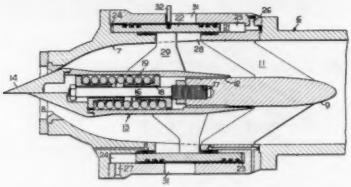
Control apparatus, for hydraulic pumps and reversible turbines, comprising adjustable vanes or blades and servomotors therefor, each blade being pivoted to a piston rod of a servomotor through the intermediary of a lever. The casings of the servomotor are kinematically connected with respective adjacent blades. This connection is effected through the intermediary of double-armed levers, one arm thereof being connected to the piston rods of the associated servomotors, and the other arms to the casings of the servomotors of the respective adjacent blades.

3,824,033

HYDRAULIC TURBINE NOZZLE

Selim A. Chacour, York, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 26, 1973, Ser. No. 344,989
Int. Cl. F01d 17/00
U.S. Cl. 415—151 2 Claims



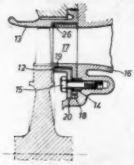
A nozzle for an impulse hydraulic turbine including a needle valve slidably supported within the nozzle body for movement into and out of closing engagement with a nozzle orifice. A hydraulic piston in the form of an annular ring is slidably contained in a fluid tight chamber about the needle valve. The annular piston is connected to the needle valve to impart the desired sliding movement thereto.

3,824,034

GUIDE BLADE RING

Werner Leicht, Stetten/Meersburg, Germany, assignor to Motoren-und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany

Filed Apr. 27, 1972, Ser. No. 248,094
Claims priority, application Germany, May 3, 1971, 2121707
Int. Cl. F01d 25/00, 13/02
U.S. Cl. 415—217 11 Claims



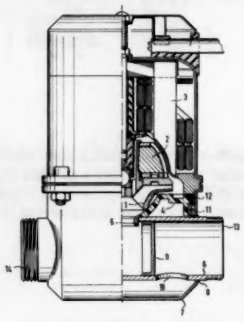
A guide blade ring which divided into segments is secured at the gas guide housing of an axial turbine, for example, of an exhaust-gas turbo-supercharger for a reciprocating internal combustion engine, in which the joints between the individual segments form in the cold condition air gaps that extend approximately in the direction of the blade inlet angle; each segment includes a radially inwardly extending flange at which the respective segment is secured by means of two bolts between an inner cover ring and the gas guide housing whereby the inner cover ring assumes the radial centering function of the segments and the sealing function for the inner joint gaps; a centering bushing is arranged in one of the two bolt bores which surrounds the respective bolt with a spacing and connects with each other the flange and the gas guide housing while simultaneously determining also the position of the segments in the circumferential direction; the bolt bore for the respective other bolt of each segment surrounds the same with a gap.

3,824,035

HOUSING FOR CENTRIFUGAL PUMPS

Nikolaus Laing, Hofener Weg 35 bis 37, 7141 Aldingen bei Stuttgart, Germany

Filed May 22, 1972, Ser. No. 255,385
Claims priority, application Austria, May 27, 1971, 4577/71
Int. Cl. F04d 29/42, 17/00
U.S. Cl. 415—219 C 1 Claim



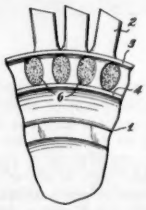
A centrifugal pump having a pump housing which communicates through a first bore in a pipe with the suction side thereof and through a second bore in the pipe with the pressure side thereof.

3,824,036

GAS TURBINE ROTORS

Robert Noel Penny, Solihull; Peter Harry Parker, Redditch, and Calvin Eric Silverstone, Oversley Green, all of England, assignors to British Leyland Truck and Bus Division Limited, Leyland, England

Filed Jan. 12, 1972, Ser. No. 217,205
Claims priority, application Great Britain, Feb. 15, 1971, 4657/71
Int. Cl. F01d 5/08
U.S. Cl. 416—95 4 Claims



An integrally cast gas turbine rotor, with a continuous rim existing at the roots of its blades, is characterized by having the blades rooted also to a second continuous rim situated at a smaller radius, such that this inner rim is subject to temperatures (and hence thermal stresses) significantly lower than those experienced by the existing outer rim.

3,824,037

SUSPENSION OF ROTOR BLADES ON THE ROTOR HEAD OF A ROTORCRAFT WITHOUT THE USE OF FLAPPING OR DRAG HINGES

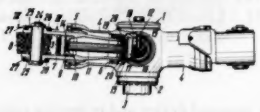
Karlheinz Mautz, and Alois Schwarz, both of Ottobrunn, Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Oct. 6, 1972, Ser. No. 295,730

Claims priority, application Germany, Oct. 12, 1971, 2150741

Int. Cl. B64c *27/48*

U.S. Cl. 416—136 11 Claims



Vibration-free and wobble-free suspension of rotor blades in the rotor head of a helicopter. The invention is applicable to blade suspensions wherein the blades are received into a blade-base holding sleeve and same is then mounted on a central member in the rotor head through a compact bundle of elastic lamellae which are arranged parallel to the rotating plane of the rotor and whose radially inner ends are connected to a pin fixed in the central member and coaxially with the rotor axis. In the present invention there is additionally provided bands of stiffly resilient material encircling the central member and further similar bands are arranged around the holding sleeve. Thus, in case of breakage of the central member the rotor blade will not only be temporarily held in operational position but will be permitted to move radially outwardly sufficiently to slightly unbalance the rotor and thereby give the pilot warning of the occurrence of damage. On the sleeves holding the base of the blade, the resilient bands will in the event of breakage hold the parts in operating relationship for a sufficient period of time to maintain the rotor operational until the break is presumably discovered on a routine inspection.

3,824,038

COOLING DEVICE FOR HYDRAULIC TORQUE CONVERTERS

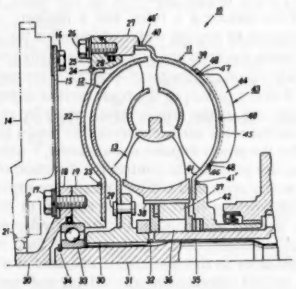
Masayoshi Tokunaga, Osaka, Japan, assignor to Kabushiki Gaisha Daikin Seisakusho, Osaka, Japan

Filed Sept. 4, 1973, Ser. No. 393,815

Claims priority, application Japan, Sept. 11, 1972, 47-91612

Int. Cl. B23p *15/04;* F01d *5/04*

U.S. Cl. 416—180 4 Claims



A torque converter particularly adapted for automotive use is provided with novel and unitarily joined cooling means resulting in a more efficiently operating assembly.

3,824,039

SUBLIMABLE TARGETS

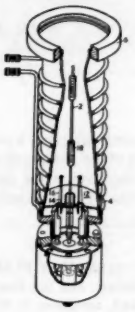
Basil Dixon Power, Crawley, England, assignor to The British Oxygen Company Limited, London, England

Filed Mar. 23, 1972, Ser. No. 237,335

Claims priority, application Great Britain, Mar. 24, 1971, 7745/71

Int. Cl. F04b *37/00*

U.S. Cl. 417—48 11 Claims



A source of sublimable material is at least partially enclosed within a body or shield of nonsublimable material and in heat-exchange relation therewith. Both the sublimable material and the shield may be of various shapes and configurations, and both the sublimable and the non-sublimable material may be supported on a common support.

3,824,040

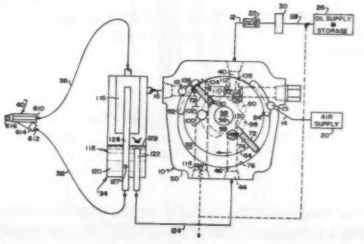
FLOATLESS CONTROL OF LIQUID LEVEL, ESPECIALLY USEFUL IN ATOMIZING SYSTEMS

David Aronson, Upper Montclair, N.J., assignor to Compump Systems, Inc., Newark, N.J.

Filed Apr. 6, 1972, Ser. No. 241,745

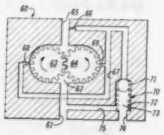
Int. Cl. F04b *23/10;* B05b *9/00;* B01d *47/00*

U.S. Cl. 417—204 13 Claims



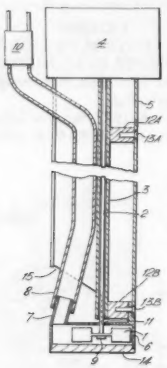
A system is provided for regulating the level of output fluid of a pump, which system includes primary pumping means for pumping fluid from a supply source, recycle pumping means for pumping accumulated output fluid, means for combining the fluid output of the primary pumping means and recycle pumping means into a combined fluid output stream, means for accumulating combined fluid output stream, means for restricting said combined fluid output stream whereby pressure variations in the combined fluid output stream can be sensed, and fluid pressure responsive control means responsive to said pressure variations for regulating flow of the combined fluid output stream to the primary pumping means and to the means for accumulating combined fluid output stream. In addition, a system is provided for atomizing a liquid in a gas, such as oil in air, employing the above system for regulating the level of output fluid to a pump.

3,824,041
POSITIVE DISPLACEMENT LIQUID PUMP
Charles H. Rystrom, 696 Ash St., Winnetka, Ill. 60093
Filed Aug. 1, 1972, Ser. No. 276,966
Int. Cl. F04b 49/00
U.S. Cl. 417—310 3 Claims



A positive displacement pump has a passageway connected between the outlet side of the pump and an intermediate location in the pumping mechanism for supplying liquid under pressure thereto for reducing cavitation in the pump.

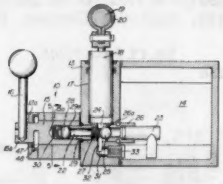
3,824,042
SUBMERSIBLE PUMP
Edward Barnes, Speldhurst, and Ian Douglas Fergusson, Godstone, both of England, assignors to BP Chemicals International Limited, London, England
Filed Nov. 16, 1972, Ser. No. 306,987
Claims priority, application Great Britain, Nov. 30, 1971, 55555/71
Int. Cl. F04d 13/06, 17/00
U.S. Cl. 417—424 6 Claims



A submersible pump suitable for the transfer of liquid comprising a cylindrical shaft of mean radius R_1 and length L connected at one extremity to a drive mechanism and at the other extremity to an impeller located within an impeller housing provided with a liquid inlet and outlet, the shaft being free to rotate within a guide tube of mean radius R_2 such that the ratio of R_1 to R_2 is in the critical range 1:1.15 to 1:2.0 and the ratio of L to R_1 is greater than 80:1.

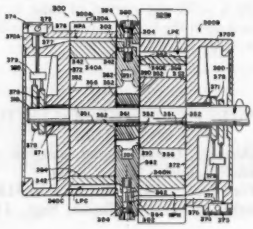
3,824,043
HYDRAULIC PUMP AND VALVE UNIT
Randy J. Nordell, Salt Lake City, Utah, assignor to Time Commercial Financing Corporation, Salt Lake City, Utah
Filed June 7, 1973, Ser. No. 367,713
Int. Cl. F04b 21/02; F17d 3/00
U.S. Cl. 417—440 7 Claims

A hydraulic pump and valve unit for operating a hydraulically powered device, such as a hydraulic power cylinder for raising and lowering the cab of an automotive truck, includes a pump portion closely coupled to a valve portion, the latter having a cylindrical valve spool with an axial bore adapted to receive hydraulic fluid from the pump portion of the unit. The valve spool is rotatably mounted and arranged so as to supply inflowing hydraulic fluid under pressure to one port of the



hydraulically powered device and to receive return fluid from another port of such device when in one position, and to reverse said supply and return in a rotated position. The pump is located between a hydraulic fluid reservoir and the valve, and the supply of hydraulic fluid from the former to the latter by the pump is through check-valved passage means providing a substantially direct and free flow path for the fluid.

3,824,044
ENGINE
John N. Hinckley, Beloit, Wis.
Division of Ser. Nos. 860,684, Sept. 24, 1969, Pat. No. 3,684,413, and Ser. No. , , which is a continuation-in-part of Ser. No. 812,656, April 2, 1969, abandoned. This application July 24, 1972, Ser. No. 274,202
Int. Cl. F01c 11/00
U.S. Cl. 418—12 3 Claims



A rotary fluid engine powered by externally pressurized working fluid including a rotor and a plurality of swinging arms positioned to engage with and impart a torque force to the rotor when the arms are driven sequentially inward by the selective admission of charges of externally pressurized working fluid. A first segment on the rotor surface engages the free end of each arm as the arm is driven inwardly and a second segment on the rotor surface operates to return the arm outwardly after the power impulse is completed. Valving and conduit means are provided to control the direction of the working fluid to the arms and exhaust means are provided to exhaust spent working fluid from the engine. In one embodiment, the valving and conduit means are adapted to direct charges of externally pressurized working fluid sequentially against said arms so that the engine operates as a simple engine. In a second embodiment, the valving and conduit means are adapted to direct charges of externally, pressurized working fluid first against one of said arms at a high pressure and secondly against another arm at a relatively lower pressure so that said engine operates as a compound engine. In a third em-

bodiment, transfer valve means are provided which permit said engine to be switchable between said simple and compound modes of operation. The rotor surface may include a plurality of said first and second segments so that each arm will transmit a corresponding plurality of power impulses to the rotor for each complete rotor revolution.

3,824,045

VARIABLE-CAPACITY SLIDING-VANE PUMP

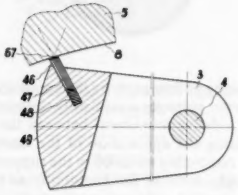
Wladyslaw Wisniewski; Jan Piotrowski, and Zbigniew W. Szeler, all of Gdynia, Poland, assignors to Centrum Techniki Okretowej, Przedsiebiorstwo Panstwowe Wyodrebnione, Gdansk, Waly Plastowkie, Poland

Filed Feb. 16, 1972, Ser. No. 226,681

Claims priority, application Poland, Feb. 22, 1971, 146413; Nov. 20, 1971, 151668; July 5, 1971, 149230

Int. Cl. F04c *15/04*

U.S. Cl. 418—30 **3 Claims**



The invention relates to a technical solution of a double-acting, thus relieved, sliding-vane pump, its capacity being adjustable in a continuous way during operation of the pump.

The adjustment of the capacity of said pump is performed at constant speed of the pump rotor, by means of turning a movable cylinder, movable inlet and outlet chambers, or by deformation of a flexible cylinder, relatively to the modification of the pump.

Said pumps can have pendulous vanes mounted non-centrically on shafts, or rotatively, or artitulatively mounted in channels of the rotor, or rotatively and centrically mounted on shafts.

The vanes mounted in all the modification of the pump are provided with seals at the contact areas with the cylinder, and in channels of the rotor. The seal of the vane against the cylinder is realized by means of a plate pack, pushed out individually by an elastic and flexible material. The sealing of the vane in the rotor is secured by means of a rubber bar or elastic thin-walled seal with spread arms.

3,824,046

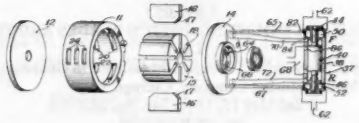
SEQUENTIAL VALVE FOR ROTARY VANE AIR MOTORS

John R. Hanning, Bryan, Ohio, assignor to The Aro Corporation, Bryan, Ohio

Division of Ser. No. 102,802, Dec. 30, 1970, Pat. No. 3,714,969, which is a continuation-in-part of Ser. No. 781,061, Dec. 4, 1968, abandoned. This application Jan. 24, 1973, Ser. No. 326,071

Int. Cl. F01c *21/00*; **F03c** *3/00*; **F04c** *15/00*

U.S. Cl. 418—82 **2 Claims**



An improved valve assembly has one inlet and two outlets. The valve is operable to sequentially provide a fluid flow path first between the inlet and one outlet and next between the inlet and both outlets. Utilization of the valve assembly for a rotary vane type air motor driven hoist is described as a preferred embodiment.

3,824,047

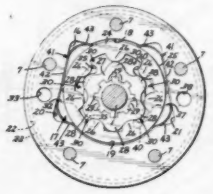
FLOATING ROTARY RING MEMBER OF FLUID DISPLACEMENT DEVICE

Hugh L. McDermott, 6101 Ashcroft Ave., Minneapolis, Minn. 55424

Filed Mar. 23, 1973, Ser. No. 344,362

Int. Cl. F01c *1/00*

U.S. Cl. 418—171 **8 Claims**



A rotary fluid displacement device operable selectively as a fluid pump or a motor and utilizing a rotor having an outer cylindrical surface and comprising intermeshing internally and externally toothed members, each rotating on its own axis within a rotor chamber defined by a housing. The rotor chamber has opposite end walls and a peripheral wall, the peripheral wall including a pair of circumferentially spaced recesses and arcuate wall portions intermediate the recesses. The arcuate wall portions are spaced from the outer cylindrical rotor surface, and a pair of resilient mounting members in the recesses have sliding sealing engagement with the rotor.

3,824,048

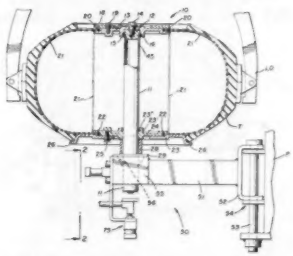
TIRE HOLDER AND HANDLER

Gary R. Getz, Norton, Ohio, assignor to McNeil Corporation, Akron, Ohio

Filed Aug. 2, 1972, Ser. No. 277,317

Int. Cl. B29h *5/02*

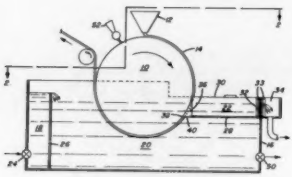
U.S. Cl. 425—28 R **13 Claims**



A holder for a radial or partially shaped tire having a support member or post which carries a plate for receiving the lower bead of the uncured tire. An expansible member is carried by the post in a manner such that the tire may be placed over the expansible member and onto the lower bead supporting plate. The expansible member is then inserted into the tire so that substantially the entire inner portion of the tire is contacted by the member. Means can be provided at each tire curing press to hold the post and actuate the expansible

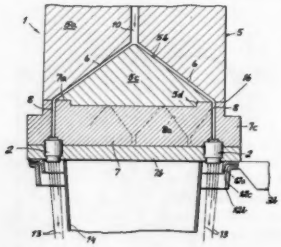
member and/or such can be provided at the location where the tire is built so as to immediately hold the tire in the desired shape prior to transfer to the tire curing press.

3,824,049
VESSEL FOR QUENCHING CAST SHEETING
Roger N. Schindler, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 13, 1970, Ser. No. 19,334
Int. Cl. B29d *7/00*
U.S. Cl. 425—71 **4 Claims**



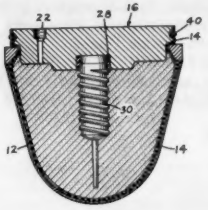
The surface of water used to quench cast polyethylene terephthalate sheeting is kept smooth by use of a weir tray which isolates all but a "slot of water" from the cast sheeting.

3,824,050
APPARATUS FOR SPINNING SYNTHETIC-RESIN FILAMENTS
Hermann Balk, Troisdorf, Germany, assignor to Reifenhauser KG, Troisdorf, Germany
Filed Mar. 16, 1972, Ser. No. 235,197
Claims priority, application Germany, Mar. 19, 1971, 2113327
Int. Cl. D01d *3/00*
U.S. Cl. 425—72 **4 Claims**



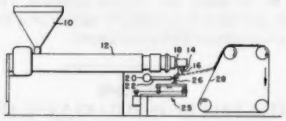
An apparatus for spinning synthetic-resin filaments has a distributing head formed with a conical passage into the apex of which a synthetic-resin melt is forced from a worm-type extruder machine. A manifold below the distributing head has a plurality of passages equispaced around the annular mouth constituting the base of the conical passage and each provided with a spinneret or nozzle having a plurality of filament-forming orifices. A stream of cooling air is directed along filaments in their direction of travel away from the spinnerets by an annular air guide surrounding each spinneret or surrounding all the spinnerets.

3,824,051
MOLD APPARATUS FOR ISOSTATIC PRESSING OF HOLLOW PARTS
Hendrick Jozef Van Leemput, Duffel, Belgium, assignor to National Forge Company, Irvine, Pa.
Filed June 25, 1973, Ser. No. 372,904
Int. Cl. B29c *5/00*; **B30b** *5/02, 11/32*
U.S. Cl. 425—78 **5 Claims**



In manufacturing hollow parts by the application of isostatic pressure to powder particles a resiliently supported mandrel is used to permit relative movement between the mandrel and the support during the application of the isostatic pressure. The mandrel is removably received in the supporting structure to permit disengagement of the mandrel from the supporting structure following the application of isostatic pressure. The resilient mounting of the mandrel and its ability to be removed from the supporting structure permits the production of hollow compacted parts that are free from cracks.

3,824,052
APPARATUS TO PRODUCE NONWOVEN FABRIC
James E. Fowler, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Continuation of Ser. No. 134,131, April 15, 1971, abandoned, which is a division of Ser. No. 11,725, Feb. 16, 1970. This application Dec. 10, 1973, Ser. No. 423,332
Int. Cl. B29c *13/00*; **B29d** *7/00*
U.S. Cl. 425—83 **4 Claims**

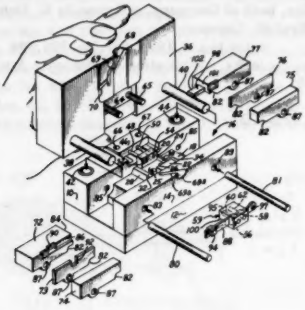


Process and apparatus to produce nonwoven fabric from a stream of liquid material having a high di-electric constant. The stream of liquid material is delivered past an air nozzle having a high electrical potential which attracts the liquid stream and shatters it into fine fibrous particles.

3,824,053
MOLD FOR MOUNTING SWITCH BLADES AND THE LIKE
Stanley J. Styrkowicz, Chicago, Ill., assignor to Guardian Electric Manufacturing Company, Chicago, Ill.
Filed May 15, 1972, Ser. No. 253,173
Int. Cl. B29f *1/10*
U.S. Cl. 425—123 **1 Claim**

An improved mold for the manufacture of stacked contact blades provides a mold cavity with opposed sides of the cavity

having fingers that may extend partially into the cavity to define various configurations for the ultimate molded product.



The fingers also act to hold the contact blades in a rigid, discrete position during the molding operation.

3,824,054

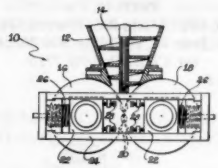
CONTROLLER FOR COMPACTING MACHINES

Leroy S. Harris, Rolling Meadows, Ill., assignor to K-G Industries, Inc., Rosemont, Ill.

Filed Oct. 12, 1972, Ser. No. 296,821

Int. Cl. B29c *3/06*

U.S. Cl. 425—149 **10 Claims**



A material compacting construction comprising a compacting means, a first drive for the compacting means, a feeding means, and a second drive for the feeding means. Control means are provided for varying the operation of the feeding means in accordance with the load applied to the drive for the compacting means. The control means includes means for sensing the load and a meter connected to the sensing means. When the meter records a limiting position, indicating that the load has increased or decreased to a limiting value, an electrical circuit associated with the meter is operated. This circuit in turn operates adjusting means for the drive of the feeding means whereby the rate of material fed to the compacting means is adjusted. This adjustment is calculated to maintain the energy level and product quality at desired values.

3,824,055

SCREEDER

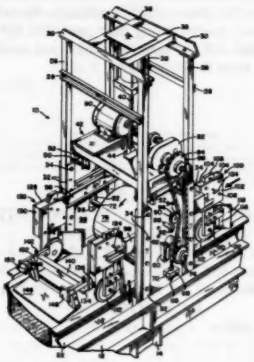
Theodore W. Shoe, Fletcher, and Mark J. Wise, Brookville, both of Ohio, assignors to The Flexicore Co., Inc., Dayton, Ohio

Filed Apr. 19, 1971, Ser. No. 135,325

Int. Cl. B28b *3/12*

U.S. Cl. 425—220 **23 Claims**

Screeding apparatus for smoothing and finishing the upper surface of freshly poured concrete in the manufacture of precast concrete slabs. The screeder comprises a base frame, including a conveyor for carrying concrete filled forms through the screeder, and a vertically reciprocal screeder carriage upon which are mounted a rotatable drum, pairs of inwardly and outwardly directed scraper blades mounted downstream and upstream of the drum, rollers for engaging the upper flanges of the concrete forms passing through the screeder, wipers curved to the configuration of the drum surface and wiping the edges of the drum, and a final trowel positioned downstream of the drum and extending across the screeder to impart a final finishing and smoothing effect to the concrete as it passes through the screeder. All of the various components mounted on the screeder carriage are adjustable to permit the uncured slabs carried by the forms to be screeded level with the upper edge of the form or at depths below the upper edge of the form if somewhat thinner slabs are being manufactured.



3,824,056

APPARATUS FOR SPONGING THE RIMS OF UNFIRED CERAMIC HOLLOW-WARE

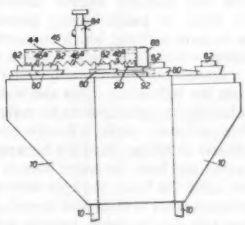
Sidney Wedgwood, Newcastle-under-Lyme, England, assignor to Staffordshire Ceramic Systems Limited, Under-Lyme, England

Filed Jan. 30, 1973, Ser. No. 327,974

Claims priority, application Great Britain, Feb. 1, 1972, 4553/72

Int. Cl. B28b *1/02, 1/29*

U.S. Cl. 425—266 **6 Claims**



Apparatus for sponging the rims of articles of unfired ceramic hollow-ware includes a rotatable disc member having a band of sponge material detachably mounted round its

perimeter and depending from it as a skirt whose lower edge is formed with a pattern of alternate peaks and valleys, and a moving conveyor is arranged at a lower level than the sponge band so that during a portion of its travel its path coincides with the sponge band, the conveyor having upstanding from it at intervals a plurality of spigots on each of which a work-holder is rotatably fitted, each work-holder having associated with it a driving wheel and containing a loose interchangeable liner, drive means being provided for the disc member and the conveyor together with a moving band which acts to impart rotation to each work-holder about its own vertical axis while it is in a position for the article it contains to be acted upon by the sponge band, means being also provided for moistening the sponge band and for squeezing out excess moisture and clay fragments from it.

3,824,057

CONTINUOUS MOLDING CONVEYOR WITH SIDE CLAMPING AND RELEASE

Andrew T. Kornylak, and Charles P. Tabler, both of Hamilton, Ohio, assignors to Kornylak Corporation, Hamilton, Ohio

Filed Sept. 20, 1972, Ser. No. 290,744
Int. Cl. B29d *27/00*
U.S. Cl. 425—329 **17 Claims**

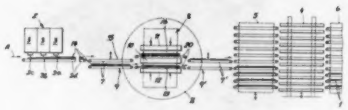
Plastic is foamed in a pressure tunnel portion of a molding conveyor formed by opposed endless conveyor runs with side pieces defining the product cross section. One or both employed the endless runs, preferably the bottom conveyor run is laterally split into at least two separate endless shiftable conveyors respectively carrying the side pieces forming the sides of the pressure tunnel, which shiftable conveyors are laterally movable, with respect to the conveying or molding direction, at the tunnel entrance and the tunnel exit for clamping and unclamping respectively, that is for bringing the side pieces horizontally toward each other transverse to the molding direction to form the final configuration for the tunnel cross section and away from each other at the molding tunnel exit to release the sides of the molded product. This clamping and unclamping of the side pieces is particularly important with molded sheets having a configured edge so that the side pieces may be constructed with a corresponding configuration. Preferably, the two shiftable endless conveyors are constructed of a series of plates having pivotal connections therebetween to form a chain, which connections will allow additional sliding or shifting of the plates with respect to each other within a limited range, preferably under the control of guide means on the individual plates and stationary support structure. Preferably, the guide means are rollers on the plates engaging within stationary tracks. A flexible cover endless belt may be employed to bridge the joint between the shiftable endless conveyors and form the entire bottom surface for the tunnel portion. After the lower shiftable conveyors have been moved toward each other to their final tunnel configuration, a flexible endless belt may be tightly brought into contact with the tops of the side pieces and clamped by the upper rigid endless conveyor, so that through the unsupported tunnel portion, the upper belt will be tightly held at its opposite ends and not subject to sagging while forming a smooth continuous upper wall for the molding pressure tunnel.

3,824,058

APPARATUS FOR THE PRODUCTION OF PRESSED BOARD

Heinrich Axer, Nettetal-Lobberich, and Ernst Heckmanns, Straelen, both of Germany, assignors to G. Siempelkamp & Co., Krefeld, Germany

Filed Jan. 8, 1973, Ser. No. 321,796
Claims priority, application Germany, Jan. 8, 1972, 2200899
Int. Cl. B29j *5/08*
U.S. Cl. 425—338 **10 Claims**



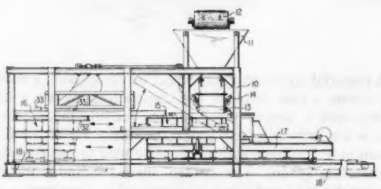
An apparatus or plant for making pressed board from particulate or fibrous material, comprises a dispensing station for depositing such material on a movable surface, e.g. a conveyor and/or tray, a prepress for compacting the mat of this material and a multiplaten press for the final pressing stage. The prepress has at least two stages and is operated to compact the mat in these stages alternately, i.e., one mat is compacted in one stage of the prepress while a previously compacted mat is removed from the other stage and a new layer of the material introduced therein by alternatingly operable service mechanisms for charging and discharging the prepress.

3,824,059

MOLDING MACHINE FOR PRODUCING CONCRETE PRODUCTS

Robert E. Heltzel, 6922 Mines Rd., Warren, Ohio 44484

Filed June 16, 1972, Ser. No. 263,447
Int. Cl. B28b *1/00, 7/10*
U.S. Cl. 425—424 **15 Claims**



The present disclosure is directed to an improved concrete product, method for the formation thereof and a molding machine for producing simultaneously a plurality of concrete products of the same external geometric configuration in a horizontally maintained mold box movable between a concrete charging station and a troweling and tamping station. The mold box employed is an elongated rectangular open top and open ended box having the forms set in the box which define a plurality of similar cross sections of products. The ends of the mold box are closed by end plates of complemental configuration to the cross section of the mold cavity. One set of end plates are mounted to be moved out of the way when the molded product is to be removed from the mold box and the other set of end plates at the opposite end of the mold box are mounted to be rammed through the cavities of the mold box to eject the products molded on the bottom mold plate or plates.

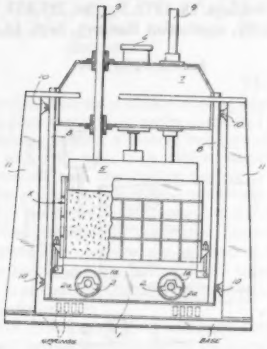
3,824,060
APPARATUS FOR MAKING SHAPED BODIES

Gunter Helmrich, Grevenbroich, and Fritz Wulfing, Rheydt, both of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Postfach, Germany

Division of Ser. No. 167,126, July 29, 1971, which is a division of Ser. No. 854,184, Aug. 29, 1969, Division of Ser. No. 126,483, March 22, 1971, Pat. No. 3,743,468, which is a division of Ser. No. 854,184, Aug. 29, 1969, abandoned. This application Jan. 12, 1973, Ser. No. 323,314The portion of the term of this patent subsequent to July 3, 1990, has been disclaimed.

Int. Cl. B28b *3/04*

U.S. Cl. 425—425 6 Claims



An apparatus for producing coherent shaped bodies from granular material. The granular material is confined in a mold and the mold is subjected to vibratory motions requisite for compacting the granular material. In accordance with the invention the frequency of the vibratory motions is continuously varied.

3,824,061
DEVICE FOR MAKING HOLLOW BODIES FROM THERMOPLASTIC MATERIAL BY ROTATION-MELTING

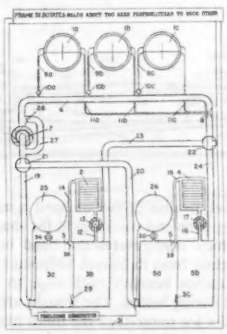
Herbert Giehler, Dautphe-Wilhelmshuette, Germany, assignor to Elkamet-Werk Lahn-Kunststoff GmbH, Biedenkopf/Lahn, Germany

Filed July 7, 1972, Ser. No. 269,741

Claims priority, application Germany, July 7, 1971, 2133799

Int. Cl. B29c *5/04*

U.S. Cl. 425—435 2 Claims



A device for making hollow bodies from thermoplastic material by rotation-melting, wherein either one or several hollow molds which are to be filled partially with fluid or easily pourable plastic and which are composed of two mold halves, are rotatably positioned within a frame or base about two axes preferably position at right angle with respect to each other and are selectively heated or cooled controllably during the rotation, by means of a fluid heat transfer medium.

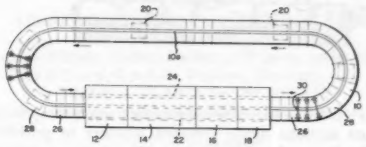
3,824,062
TRACK-TYPE MOLDING APPARATUS AND CARRIAGE MEANS THEREFOR

Robert E. Farrell, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Jan. 29, 1973, Ser. No. 327,300

Int. Cl. B29g *3/00*

U.S. Cl. 425—451 15 Claims



Molding apparatus comprising track means defining a predetermined path or circuit, a plurality of work stations associated with the track means, and mold-carrying carriages driven along the track means and through the work stations. The carriages each include a plurality of relatively movable carriage platens which, during the carriage movement along the track means, are locked in closed positions by locking means including cooperative jaws and locking elements or collars mounted on axially movable locking rods. Also, the track means includes successive straight and curved sections which are in different planes to prevent their simultaneous engagement with a thereover passing carriage, thereby minimizing wear during the carriage movement.

3,824,063
PIEZO-ELECTRIC CIGARETTE LIGHTER

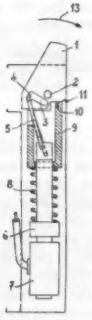
Pierre Chevallier, Sainge-Foy-les-Lyon, France, assignor to Etablissements Genoud & Cie. Societe Anonyme, Venissieux (Rhone), France

Filed Apr. 5, 1973, Ser. No. 348,107

Claims priority, application France, Apr. 7, 1972, 72.12862

Int. Cl. F23q *2/16*

U.S. Cl. 431—255 4 Claims



A piezo-electric lighter wherein the control key thereof is adapted to actuate an intermediate sliding member for compressing the striker spring so that when the key is released the

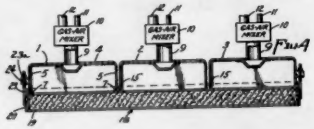
spring expansion causes the assembly to resume automatically its reset position by virtue of the off-setting of the bearing point of this intermediate member in relation to fulcrum of said key.

3,824,064

INFRA-RED PROCESS BURNER

Rudolph S. Bratko, 10706 Harvard Ave., Cleveland, Ohio 44109

Filed May 25, 1973, Ser. No. 364,121
Int. Cl. F23d *13/18*
U.S. Cl. 431—328 **4 Claims**



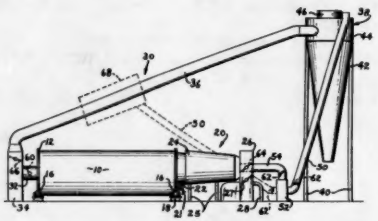
There is disclosed an infra-red process burner, comprised of individual sections rigidly fastened together to provide a generally elongated unit having a common continuous burner face, infra-red generation being controllable in each section and operable in unison to avoid longitudinal areas of material passing therebeneath from receiving less heat than adjacent areas, or individually operable to selectively heat along strips, the virtually instantaneous generation of infra-red heat and termination thereof because of the composition of the burner face, facilitating accurate control of the use of the burner for process treatment of material of widely varying types.

3,824,065

METHOD OF DRYING A PRODUCT

Stanley P. Thompson, 2718 Osborn Rd., Topeka, Kans. 66614

Continuation-in-part of Ser. No. 135,068, April 19, 1971, Pat. No. 3,749,382. This application Apr. 30, 1973, Ser. No. 355,713
Int. Cl. F27b *7/02, 15/00*
U.S. Cl. 432—14 **4 Claims**



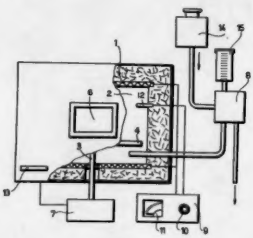
A method of drying a product utilizing a combustible fuel employs combustion gases as the medium for conveying the product through the dryer. The combustible fuel is burned in a combustion zone to produce heat and gases of combustion. The heat and gases are moved from one end of a drying zone to the opposite end along with the product being dried, which is pneumatically conveyed. A portion of the combustion gases are then separated from the dried product and directed along a path, which bypasses the combustion zone, to reintroduce the gases into the forward end of the drying zone. By recycling the combustion gases for use as the conveying medium, while bypassing the combustion zone, the oxygen content is reduced in the drying zone without affecting combustion in the combustion zone. Thus there is less likelihood of thermal decomposition occurring in the drying zone. The recycling of the combustion gases which have a relatively high vapor content also increases the vapor pressure of the liquid water droplets in the drying zone. These droplets may therefore remain near the surface of the product being dried for a longer period of time and act as a barrier against thermal decomposition. The relatively high K value of the water droplets also facilitates heat transfer to the interior of the product thereby forcing additional moisture toward the surface.

3,824,066

BAKING OVEN

Istvan Muranyi; Attila Voros; Janos Varga, and Ivan Orosz, all of Budapest, Hungary, assignors to Labor Mueszeripari Muevek, Esztergom, Hungary

Filed Sept. 18, 1972, Ser. No. 289,633
Claims priority, application Hungary, Sept. 16, 1971, OE 2251
Int. Cl. F27b *5/04*
U.S. Cl. 432—57 **4 Claims**



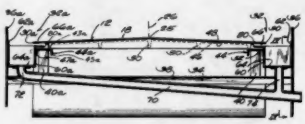
A baking oven for test-baking loaves of bread has a baking chamber heated by a heating element to a desired baking temperature, and a door through which to introduce the loaves. In response to closure of the door, water is passed through a pipe extending from the outside into the baking chamber and is allowed to fall on the heating element for immediate evaporation. The amount of water is metered so as to be sufficient to saturate the air in the baking chamber with water vapor at the baking temperature.

3,824,067

OVEN CONVEYOR AND METHOD

Gerald Lee Voshel, Kentwood, Mich., assignor to Werner Lehara, Inc., Grand Rapids, Mich.

Filed Mar. 20, 1973, Ser. No. 343,122
Int. Cl. F27b *9/14*
U.S. Cl. 432—74 **9 Claims**



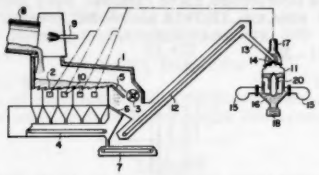
A normally flat, flexible conveyor band is moved endlessly through a baking oven and conforms to the shape of a support in the oven which configurates the band in a continuous downward direction from its lateral midpoint to each edge. A drain trough extends beneath each edge to catch cooking fluids produced during baking. The troughs are sloped toward a discharge outlet for removal of the fluids from the oven. At the outlet of the oven, the band resiliently resumes its flat configuration until its re-entry into the oven along its endless travel.

3,824,068

CLINKER COOLING APPARATUS

Hiroshi Kobayashi, Yokohama, and Goro Okada, Tokyo, both of Japan, assignors to Babcock-Hitachi, Tokyo, Japan

Filed May 18, 1973, Ser. No. 361,535
Claims priority, application Japan, May 19, 1972, 47-49097
Int. Cl. F27b 7/02
U.S. Cl. 432—80 7 Claims



This invention provides a clinker cooling apparatus which comprises a grate type clinker cooler connected with a rotary kiln for calcining clinker, a moving bed type clinker cooler connected with said grate type clinker cooler, a breaker disposed between said two clinker coolers to break large masses of the clinker, and screening equipment disposed before and after said breaker, respectively, to separate the large masses and fine granules from the clinker. This clinker cooling apparatus preferably comprises, in addition to the foregoing members, a heat exchanger having a heat transmission surface, which is mounted in said moving bed type cooler to cool the clinker indirectly.

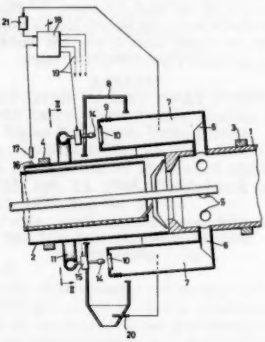
This clinker cooling apparatus comprising a combination of grate type and moving bed type clinker coolers gives such high cooling effect and high heat recovery efficiency as will not be attainable by single use of either of the two coolers, and this clinker cooling apparatus is further advantageous in that the exhaust gas contains no dust or hardly any dust and it has a compact size.

3,824,069

METHOD OF INCREASING THE COOLING EFFECT OF A ROTARY KILN-SATELLITE COOLER AND DEVICE FOR CARRYING OUT THE METHOD

Kunibert Brachthauser, Bensberg, and Jurgen Langmaack, Niederkassel, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

Filed Mar. 9, 1973, Ser. No. 339,582
Claims priority, application Germany, Mar. 9, 1972, 2211264
Int. Cl. F27b 7/02
U.S. Cl. 432—80 15 Claims



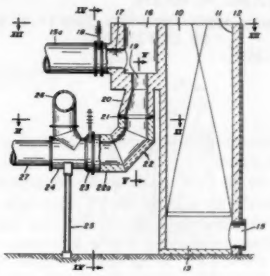
Method of increasing the cooling effect of a rotary kiln-satellite cooler includes periodically injecting a cooling liquid from stationary nozzles, in synchronism with the rotary speed of the rotary kiln into the interior of the satellite tubes of the cooler through cooling air inlets formed at an end of the satellite tubes; and device for carrying out the method includes at least one cooling liquid supply line, at least one nozzle connected thereto and adapted to discharge a liquid jet having an axis spaced from the axis of rotation of the rotary kiln substantially equal to the spacing of the central axis of the satellite tubes therefrom, the nozzle having an outlet spaced slightly from the plane of rotation of air inlet ends of the satellite tubes, and at least one periodically operable valve connected to the liquid supply line.

3,824,070

AIR HEATER WITH INTERNAL COMBUSTION CHAMBER

Friedrich-Wilhelm Drebes, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

Filed Mar. 26, 1973, Ser. No. 345,211
Claims priority, application Germany, May 13, 1972, 2223442
Int. Cl. F23l 9/04
U.S. Cl. 432—214 7 Claims



An air heater with an internal combustion chamber is supplied with gas from an externally provided burner which can be shut off from the combustion chamber by means of a hot gas slide valve. This valve lies between the burner and an elbow, with a refractory lining. A water-cooled support ring provides a thermal barrier between the elbow and a transition pipe to couple the burner output to the combustion chamber. A hot air exhaust opening controlled by a slide valve is arranged in the combustion chamber to overlie the point of entry of hot gases from the burner.

3,824,071

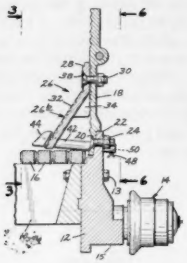
FURNACE PALLET

Clifford E. Lovold, Beaver Bay, Minn., assignor to Reserve Mining Company, Silver Bay, Minn.

Filed July 30, 1973, Ser. No. 383,486
Int. Cl. F27b 9/00, 21/02
U.S. Cl. 432—241 7 Claims

A pallet of the type used in moving-grate furnaces, having sloping side plate members fastened in place across the internal angle formed by the substantially vertical side wall members mounted on the sides of the pallet for holding in the material-in-process, and the substantially horizontal grate-

bars, positioned on top of the frame of the pallet and on which the material-in-process sits. The sloping side plates have



openings therethrough for the passage of hot gases which promotes the heating of the material-in-process adjacent the sloping side plates.

3,824,072

GAS LIGHTER BURNER IGNITION DEVICE

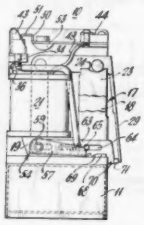
Minoru Makino, Tokyo, Japan, assignor to Kabushiki Kaisha Tanita Seisakusho, Tokyo-to, Japan

Division of Ser. No. 259,710, June 5, 1972. This application Nov. 15, 1973, Ser. No. 416,155

Claims priority, application Japan, June 11, 1971, 46-40957

Int. Cl. F23q *3/01*

U.S. Cl. 431—255 **6 Claims**



A lighter ignition mechanism includes a rectangular magnetic yoke, one leg of which is a permanent magnet, another leg of which is swingable to a yoke opening position, and a coil being wound upon another leg. A burner includes a metal top plate having a central nozzle opening communicating with a gaseous fuel source and defining a plate electrode and a needle electrode is resiliently biased to contact the plate electrode at a point offset from the nozzle, the electrodes being connected to the winding with the needle electrode positive. A resilient arm is connected to the swingable leg to, upon depression, open a gas valve to the nozzle, open the yoke, and then separate the electrodes.

3,824,073

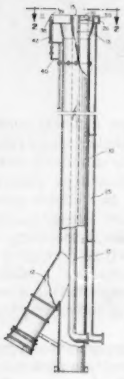
FLARE STACK GAS BURNER

John F. Straitz, III, Jenkintown, Pa., assignor to Combustion Unlimited Incorporated, Elkins Park, Pa.

Filed Aug. 13, 1973, Ser. No. 387,785

Int. Cl. F23q *9/00*

U.S. Cl. 431—284 **7 Claims**



A flare stack gas burner for waste combustible gases at both low and high pressure from oil refineries and the like is disclosed with separate delivery systems for the combustion gases, which includes a stack with a top mounted burner tip, the stack carrying a centrally disposed high pressure gas supply pipe closed at the top and with a plurality of outwardly extending vanes with gas delivery slots, the tops of the vanes being angularly disposed in a plane with respect to radial lines through the center of the stack for a swirling action of the burning gas. A low pressure gas supply pipe is mounted to and extends upwardly along the outside of the stack to a ring manifold mounted to the burner tip with a plurality of inwardly extending vanes, with gas delivery slots, the vanes being interposed between the outwardly extending vanes and angularly disposed in the same direction. Air at variable controlled low pressure is delivered into the stack at the bottom and moves upwardly between the vanes for smokeless burning. Optional fluidic seals can be provided in both the low and high pressure gas supply lines to prevent flashback. Ignitors and pilots are provided exteriorly of said stack.

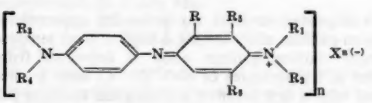
CHEMICAL

3,824,074
HAIR DYE COMPOSITIONS CONTAINING SALTS OF MORPHOLINO(2,3-b)PHENOXAZONIUM
Andree Bugaut, Boulogne-sur-Seine, and Monique Laudon, Gagny, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
No Drawing. Filed July 23, 1971, Ser. No. 165,740
Claims priority, application Luxembourg, July 31, 1970, 61,452
Int. Cl. D06p *3/04*
U.S. Cl. 8—10 12 Claims

Salts of morpholino-(2,3-b)phenoxazonium are incorporated into hair dye and hair setting lotion compositions.

3,824,075
DYEING HUMAN HAIR WITH INDAMINE SALTS
Gregoire Kalopissis, Paris, Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
No Drawing. Filed Sept. 14, 1971, Ser. No. 180,456
Claims priority, application France, Sept. 18, 1970, 7034043
Int. Cl. D06p *3/04*
U.S. Cl. 8—10 12 Claims

Indamine salts, having the formula



wherein R_1 and R_2 are lower alkyl, R_3 and R_4 are lower alkyl which can be substituted with hydroxy, amino or acylamino, R_5 and R_6 are hydrogen, lower alkyl or lower alkoxy, R is amino, acylamino or hydroxy, *n* is 1–2 and $X^{n(-)}$ is an anion, are useful for dyeing keratinous fibers and, in particular, human hair. These salts can be in a tautomeric form of that represented above.

3,824,076
LIQUID AMMONIA-CAUSTIC DYE SOLUTION AND DYEING THEREWITH
Hans Ortheil, Spartanburg, S.C., assignor to Kane and Company, Gastonia, N.C.
No Drawing. Filed Sept. 25, 1972, Ser. No. 291,887
Int. Cl. D06p *1/68*
U.S. Cl. 8—82 12 Claims

A dye system in which materials are bathed in a dyebath formed of a dye dissolved in substantially anhydrous liquid ammonia. A small amount of caustic is added as a fixative and to improve absorption.

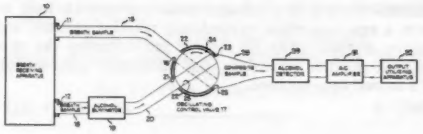
3,824,077
SO_2SH DYES IN DRY HEAT DYEING
David Razavi, Paris, France, assignor to Ugine Kuhlmann, Paris, France
No Drawing. Application May 22, 1969, Ser. No. 828,441, which is a continuation of abandoned application Ser. No. 471,725, July 13, 1965. Divided and this application July 27, 1970, Ser. No. 58,744
Claims priority, application France, July 18, 1964, 982,217; July 22, 1964, 982,560
Int. Cl. D06p *1/30*
U.S. Cl. 8—37 4 Claims

Water-soluble thiosulphonic phthalocyanine dyestuffs. These dyestuffs are useful in dyeing cellulosic fibres and are prepared by reacting a copper phthalocyanine sulphochloride in aqueous medium at a temperature between 0° C. and 100° C. with a member selected from the group consisting of alkali metal sulphides, alkali metal hydrosulphides and thiourea.

3,824,078
ALKALI SOLUBLE RAYON TEXTILE MATERIAL AND PROCESS FOR PRODUCING SAME
Daniel J. Egan, New Foundland, N.J., assignor to Londat Aetz Fabric Co., Elizabeth, N.J.
No Drawing. Filed Nov. 8, 1971, Ser. No. 196,780
Int. Cl. D06m *11/02*
U.S. Cl. 8—120 8 Claims

Alkali soluble textile materials produced without resorting to a carboxymethylation step by the impregnation of rayon with an aqueous solution of chromic acid or periodic acid, the resultant material being highly soluble in alkaline dissolving baths, such solution being free of gummy residues.

3,824,079
BREATH TESTING SYSTEM
Harry J. Venema, Wheaton, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed June 5, 1972, Ser. No. 259,415
Int. Cl. A61b *5/08*; G01n *33/16*
U.S. Cl. 23—254 E 9 Claims

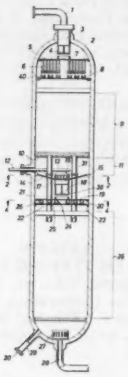


An alcoholic breath analyzer which effectively responds only to alcohol content of a subject's breath. It is immune to other breath constituents, as well as to temperature variations, that could otherwise have an adverse effect and lead to false test results. This immunity is achieved by alternately supplying to the input of an alcohol detector two breath samples identical to each other except that alcohol, if any, has been removed from one of them. In this way, the samples reaching the detector will be the same when the subject's breath is alcohol-free and any reaction to those samples will be constant. As a consequence, the instantaneous amplitude of the output signal from the detector remains substantially fixed (namely the signal will have a constant amplitude D.C. component) even though the detector may respond to and be affected by the non-alcohol constituents and by temperature changes. On the other hand, when breath alcohol is present, the chopping process effects delivery of that alcohol to the detector in time-spaced pulses or bursts and this causes the detector's output signal to vary in accordance with a square wave function and in step or synchronism with the switching between samples at the detector's input. The peak-to-peak amplitude of the resulting A.C. component will accurately represent the breath alcohol concentration.

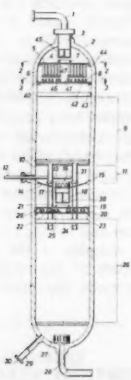
3,824,080
VERTICAL REACTOR
Randlow Smith, John C. Strickland, and John W. Sanwald, Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed Apr. 27, 1972, Ser. No. 248,281
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 R 9 Claims

A vertical, downflow reactor for contacting a two-phase vapor-liquid reaction mixture with solid catalyst contained in two or more reactor vessel catalyst zones, where-

in such reactor has means for injecting quench fluid between succeeding catalyst zones. Such reactor comprises reactor internal parts located intermediate to two catalyst zones for intimately mixing vapor and liquid reaction effluents from a first catalyst zone and quench fluid to form a new two-phase vapor-liquid reaction mixture and reactor internal parts for evenly redistributing the new reaction mixture across the top horizontal cross-section of a second catalyst zone.

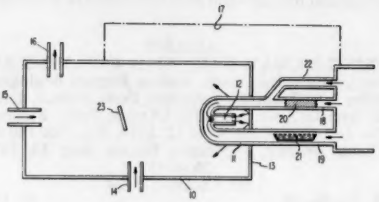


3,824,081
VERTICAL REACTOR FOR TWO-PHASE VAPOR-LIQUID REACTION CHARGE
Randlow Smith, John C. Strickland, John W. Sanwald, and Henry B. Jones, Houston, Tex., assignors to Texaco, Inc., New York, N.Y.
Filed Apr. 27, 1972, Ser. No. 248,280
Int. Cl. B01j *9/04*
U.S. Cl. 23—288 R **5 Claims**



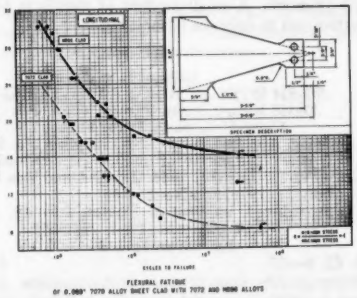
A vertical downflow reactor for contacting a two-phase, vapor-liquid reaction mixture with solid catalyst contained in one or more reactor vessel catalyst zones. Means are provided in the upper portion of such vertical reactor to separate any solid particulate contaminants from said reaction mixture prior to admitting the reaction mixture into a reactor vessel catalyst zone. Means are also provided for evenly distributing vapor and liquid components of the reaction charge mixture across the horizontal cross-sectional area of a reactor vessel catalyst zone.

3,824,082
PROCESS FOR PREPARING SUPERCONDUCTING NIOBIUM-GALLIUM ALLOY
Leon Joseph Vieland, Princeton, and Arnold Wilbert Wicklund, Hopewell, N.J., assignors to RCA Corporation, New York, N.Y.
Filed July 3, 1972, Ser. No. 268,805
Int. Cl. B44d *1/14, 1/18*
U.S. Cl. 29—194 **9 Claims**



An improved method for preparing superconducting niobium-gallium alloy having a high critical temperature whereby niobium-gallium alloy is deposited from its halides at temperatures of 640–700° C. onto a substrate coated with a first layer of a β-tungsten niobium-gallium alloy deposited at temperatures above 700° C.

3,824,083
CLAD COMPOSITES AND ALUMINOUS METAL COMPOSITIONS FOR CLADDING
Thomas L. Fritzlen, Phelps County, Mo., assignor to Reynolds Metal Company, Richmond, Va.
Continuation of application Ser. No. 838,013, June 17, 1969, which is a continuation of application Ser. No. 609,707, Dec. 23, 1966, both now abandoned, which in turn is a continuation-in-part of application Ser. No. 538,085, Mar. 14, 1966, now Patent No. 3,418,090. This application June 1, 1971, Ser. No. 148,868
The portion of the term of the patent subsequent to Dec. 24, 1985, has been disclaimed
Int. Cl. B32b *15/00*
U.S. Cl. 29—197.5 **10 Claims**



Composite articles having a core and cladding composed of heat-treatable aluminum base alloys, in particular a core alloy containing zinc, magnesium and copper

as the principal allowing elements, clad with an alloy containing about 4–5.5% zinc and about 1–1.6% magnesium; and improved cladding alloys of that type.

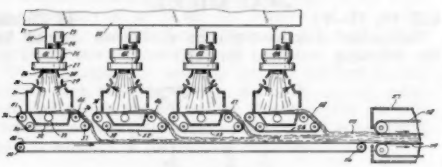
3,824,084
PRODUCTION OF LOW SULFUR COAL
Thomas J. Dillon, Elizabeth, and Abe Warshaw, Matawan, N.J., assignors to Chemical Construction Corporation, New York, N.Y.
Filed Oct. 10, 1972, Ser. No. 296,055
Int. Cl. C10l *9/00*
U.S. Cl. 44—1 R 12 Claims

Coal containing pyritic sulfur is processed at elevated temperature and pressure with water and air to convert the pyritic sulfur to water-soluble ferrous and ferric sulfate. The resulting slurry is filtered to produce a coal product of diminished sulfur content which may be burned without causing air pollution due to sulfur dioxide emission.

3,824,085
ESTERS OF POLYMERIC HYDROXYPROPYL CARBOHYDRATES AND METHOD OF USING SAME AS GELLING AGENT FOR ORGANIC SOLVENTS
James Teng, St. Louis County, Marcella C. Stubits, St. Louis, and Richard E. Pyler and James M. Lucas, St. Louis County, Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.
No Drawing. Filed Feb. 1, 1972, Ser. No. 222,660
Int. Cl. C10l *7/02*
U.S. Cl. 44—7 B 14 Claims

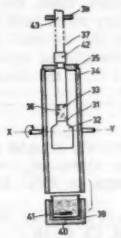
This disclosure involves esters of hydroxypropyl cellulose and hydroxypropyl starch, specifically the acetate and laurate. These cellulose esters are useful as gelling agents for organic solvents. The hydroxypropyl cellulose acetate is prepared at low cost under mild conditions and is particularly useful in gelling methylene chloride (useful in paint stripping) and methyl and ethylene bromide (useful as soil fumigants). The hydroxypropyl cellulose laurate is particularly useful as a gelling agent for jet fuel.

3,824,086
BY-PASS FIBER COLLECTION SYSTEM
Walter Merton Perry and Walter Scott Perry, both of 76 Locust Hill Road, Darien, Conn. 06820
Filed Mar. 2, 1972, Ser. No. 231,345
Int. Cl. C03b *37/04*
U.S. Cl. 65—9 9 Claims



An improved apparatus for the collection and formation into a blanket of the fine fiber glass fibers produced by a series of glass fiberizing units arranged progressively in line. It is particularly adaptable to the production of glass fibers by the well-known rotary centrifugal process. The fibers are spray coated with thermo-setting resinous binder, and collected on a foraminous conveyor with the assistance of a suction box underneath. In accordance with this invention, means are provided so the output of each individual fiberizing unit may be collected on a clear section of foraminous conveyor, which is free of any previously deposited fibrous blanket, and subject to full vacuum from under the conveyor. This results in improved fiber orientation with most of the fibers lying horizontally in the blanket, and with fewer clumps and porous spots. The individual partial blankets are then continuously combined to form a blanket of full thickness, which is then sized and cured in an oven. The improved system produces a product of greater uniformity and strength, and permits using a lower density to obtain the desired heat flow rating when formed into an insulating blanket. The partial blankets from each fiberizing unit may be formed on separate foraminous conveyors, and then combined prior to feeding into the curing oven, or the individual blanket may be by-passed after collection on a common conveyor, leaving the conveyor open for the next fiberizing unit, and with the separate blankets combined before the oven. Other advantages includes means to partially cure the thin blanket layers individually, increasing the oven capacity, and provision for insertion of laminar material between adjacent layers. The system is also adaptable to other fiberizing methods besides rotary.

3,824,087
METHOD OF MANUFACTURING A SOLID SEMICONDUCTOR GLASS
Jean Cornet, Limeil-Brevannes, and Dominique Rossler, Paris, France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 18, 1972, Ser. No. 298,623
Claims priority, application Netherlands, Oct. 29, 1971, 7138913
Int. Cl. C03b *29/00, 27/00, 5/16*
U.S. Cl. 65—32 4 Claims

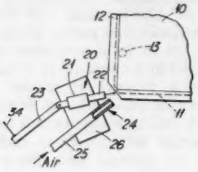


A method of manufacturing binary chalcogenide glass types from arsenic and tellurium in atomic ratios of from 30 to 60% of arsenic. According to this method a tempering treatment in stages is performed in a bath containing molten salt.

3,824,088
WELDED MULTIPLE GLAZING UNITS
John Bryan and Frederick Harry Hart, St. Helens, England, assignors to Pilkington Brothers Limited, Liverpool, England
Filed Aug. 23, 1972, Ser. No. 283,022
Int. Cl. C03b *23/20, 23/24*
U.S. Cl. 65—40 12 Claims

A welded multiple glazing unit is manufactured by forming a continuous peripheral weld uniting the margins of assembled glass sheets by passing electrical heating currents to the glass sheets between marginal positions spaced apart around the periphery of the assembled glass sheets, and directing cooling gas at the peripheral weld

during passage of the electrical heating currents. The electrical currents and cooling gas may be supplied through a



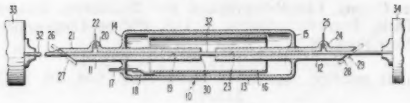
combined electrode and gas supply passage located on the corners of the unit.

3,824,089

METHOD OF ALIGNING A TWO-CAPILLARY TUBE GAS DISCHARGE DEVICE

William Eugene Riggle, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,719
Int. Cl. C03b *23/08*
U.S. Cl. 65—109 **4 Claims**



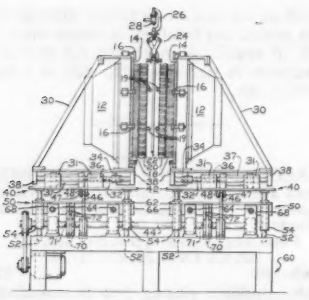
A metal rod is inserted through the left and right capillary tubes of a gas discharge device. One end of a coaxial bulb joining one capillary tube is heated until the glass thereof is softened. Then, the metal rod is rotated within the two capillary tubes until the bores thereof are axially aligned. Then, the softened end of the bulb is allowed to cool to fix the aligned capillary tubes. Then, the metal rod is removed from the discharge device.

3,824,090

TEMPERING GLASS SHEETS

Samuel L. Seymour, Oakmont, and Joseph A. Noca, Irwin, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 6, 1973, Ser. No. 330,145
Int. Cl. C03b *27/00*
U.S. Cl. 65—114 **13 Claims**



In tempering heat-softened glass sheets by quenching said glass sheets while supported in an upright position between spaced arrays of tempering nozzles through which tempering medium is applied under pressure to rapidly chill the heat-softened glass sheets, rolling means adapted to make rolling contact with one or both major surfaces is interposed between the inner ends of the nozzles and the glass to limit the degree of buffeting the glass sheet experiences during quenching.

3,824,091

METHOD OF ANCHORING FINELY GRANULATED DUST MATERIAL FROM PURIFYING PLANTS FOR METALLURGIC WASTE GASES IN ORDER TO RENDER THE DUST DISPOSABLE OR UTILIZABLE

Harry Francis Holman, Kristiansand, Norway, assignor to Hunfos Fabrikker, Vennesla, Norway

Filed July 19, 1972, Ser. No. 273,268
Claims priority, application Norway, July 21, 1971, 2,781/71
Int. Cl. A01g *7/00*
U.S. Cl. 71—12 **4 Claims**

A method to render the dust material from purifying plants for metallurgic waste gases disposable or utilizable.

3,824,092

METHOD OF MANUFACTURING A SURFACE SOIL

Karl H. R. Wikstrom, 3 Taljstensvagen, 141 46 Huddinge, Sweden, and Per E. Ericson, 11 Plankvagen, 130 50 Vendelso, Sweden

No Drawing. Continuation of abandoned application Ser. No. 52,756, July 6, 1970. This application Dec. 11, 1972, Ser. No. 314,074
Claims priority, application Sweden, July 8, 1969, 9,638/69; Dec. 23, 1969, 17,858/69
Int. Cl. C09f *3/00*
U.S. Cl. 71—12 **19 Claims**

A method of manufacturing a surface soil wherein sludge from sedimentation tanks having a dry solids content of approximately 10–90% is mixed with a sandy material and then compacted by pressing. Alternatively this surface soil may contain peat soil in addition to the sandy material.

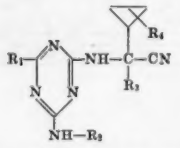
3,824,093

CONTROL OF WEEDS WITH CYANO-CYCLOPROPYL DERIVATIVES OF DIAMINO-s-TRIAZINES

Manfred Kuhne, Pfeffingen, Basel-Land, and Christian Vogel, Binningen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application May 26, 1971, Ser. No. 147,170, now Patent No. 3,766,182. Divided and this application June 25, 1973, Ser. No. 373,041
Claims priority, application Switzerland, May 29, 1970, 8,079/70; Dec. 1, 1970, 17,772/70
Int. Cl. A01n *9/22*
U.S. Cl. 71—93 **15 Claims**

Substituted diamino-s-triazine derivatives defined by the following structural formula:



(I)

wherein R_1 is one selected from the group consisting of chlorine, the methoxy, methylthio or ethylthio radical; R_2 is selected from the group consisting of hydrogen, C_1–C_4 alkyl and C_3–C_5 cyclo-alkyl; R_3 is selected from the group consisting of C_1–C_3 alkyl and cyclopropyl; R_4 is selected from the group consisting of hydrogen and the methyl radical.

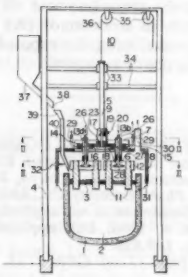
Diamino-s-triazine derivatives represented by this structure have been found to possess herbicidal activity and are especially useful as pre- and post-emergent herbicides

for the selective control of weeds and wild grasses in culture crops such as wheat, sorghum, soya beans, cotton and rice.

3,824,094
METHOD OF INHIBITING THE GROWTH OF TOBACCO SUCKERS
Tien C. Tso, Beltsville, and George L. Steffens, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Mar. 26, 1965, Ser. No. 443,106
Int. Cl. A01n
U.S. Cl. 71—78 **11 Claims**

This invention relates to a method for controlling the growth of suckers in tobacco plants with certain C_6 to C_{18} saturated fatty alcohols.

3,824,095
METHOD AND APPARATUS FOR THE PRETREATMENT OF MOLTEN PIG IRON
Ryo Ando, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 9, 1972, Ser. No. 279,183
Claims priority, application Japan, Aug. 26, 1971, 46/65,460
Int. Cl. C21c *7/00*
U.S. Cl. 75—58 **5 Claims**

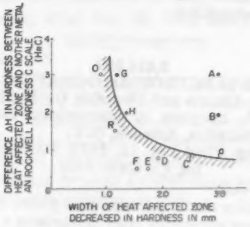


The method of pretreatment of molten pig iron comprises the steps of disposing four driving shafts at the respective corners of a square, each driving shaft driving a pair of horizontally spaced apart vertical driving members with their lower ends immersed in the portions of the molten pig iron to be treated near the upper surface thereof, incorporating a pretreating agent onto the upper surface, and rotating adjacent driving shafts in the opposite directions so as to stir the portions of the molten pig iron near the interface between the pretreating agent and the molten pig iron.

The apparatus for carrying out the method is constructed such that, the driving shafts, the stirring members and means for driving the driving shafts are supported by a non-rotating shaft and that the non-rotating shaft is adjusted in the vertical direction.

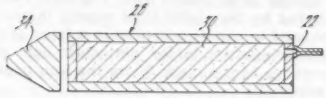
3,824,096
MANGANESE-NICKEL-ALUMINUM-COPPER-MOLYBDENUM SYSTEM AGE-HARDENABLE STEEL FOR PLASTIC MOLDS
Chiaki Asada, Nagoya, and Toshiyuki Watanabe, Nishio, Japan, assignors to Daido Seiko Kabushiki Kaisha, Nagoya, Japan
Filed June 21, 1972, Ser. No. 264,986
Claims priority, application Japan, June 21, 1971, 46/44,933
Int. Cl. C22c *37/10, 39/02*
U.S. Cl. 75—124 **4 Claims**

The disclosed steels for use as materials for plastic molds consist essentially of 0.05–0.18% C, 0.15–1.0% Si, 1.0–2% Mn, 2.5–3.5% Ni, 0.5–1.5% Al, 0.7–1.7% Cu, 0.1–0.4% Mo and the balance, iron and are age-hardenable at about 500° C. for about five hours after build-up


DIFFERENCE ΔH IN HARDNESS BETWEEN HEAT AFFECTED ZONE AND MOTHER METAL AS ROCKWELL HARDNESS C SCALE (HRC)
WIDTH OF HEAT AFFECTED ZONE DECREASED IN HARDNESS IN mm

welding. To improve the machinability, toughness and grain refining property, the steels may be added, for example with up to 0.3% S, up to 2.5% Cr and up to 0.5% Ti respectively.

3,824,097
PROCESS FOR COMPACTING METAL POWDER
John W. Smythe and Steven H. Reichman, Ann Arbor, and Don M. Weaver, Birmingham, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.
Filed Dec. 19, 1972, Ser. No. 316,490
Int. Cl. B22f *3/14*
U.S. Cl. 75—226 **10 Claims**



A process for producing billets of metals and metal alloys employing powder metallurgical techniques wherein the resultant consolidated powder masses are characterized as having a wrought-type grain structure possessed of excellent high temperature physical properties. The process relies on the use of two sequentially-phased compaction steps, whereby the metal powder packed within a sealed ductile container is first hot isostatically pressed to a density of at least about 90% of theoretical density and thereafter is extruded at an elevated temperature at an extrusion ratio greater than about 2:1 to produce a billet which approaches 100% theoretical density and is of substantially uniform grain structure throughout.

3,824,098
PYROELECTRIC COPYING DEVICE
John George Bergman, Jr., Rumson, and Glen Robert Crane, Scotch Plains, N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.
Filed June 23, 1972, Ser. No. 265,569
Int. Cl. G03c *5/08*
U.S. Cl. 96—1.5 **7 Claims**

There is disclosed an electrostatic copying device based upon the phenomenon of pyroelectricity in suitable materials such as polymeric polyvinylidene fluoride. Localized temperature changes caused by an intense light source generate electrostatic charge patterns on the material when exposed to the image of an object interposed between the light source and the material. By using thin pyroelectric films to minimize thermal diffusion, it is possible to obtain sufficient resolution to allow the charge

patterns to be observed after toning the films with electrostatically charged inks. The device is comparable in many respects to conventional xerographic devices and advantageous in the sense that its response is not wavelength dependent and its structure and operation are considerably simplified.

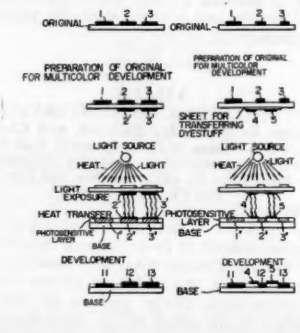
3,824,099
SENSITIVE ELECTROPHOTOGRAPHIC PLATES
Robert Bruce Champ and Meredith David Shattuck, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed Jan. 15, 1973, Ser. No. 323,678
Int. Cl. G03c 5/06
U.S. Cl. 96—1.5 **4 Claims**

Very sensitive electrophotographic plates are provided having a charge generating layer comprising a squaric acid methine dye and a charge transport layer comprising a tri-aryl pyrazoline compound.

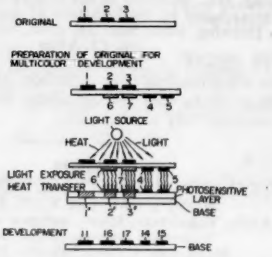
3,824,100
TRANSPARENT IRON OXIDE MICROCIRCUIT MASK
Edward M. Griest, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Continuation of abandoned application Ser. No. 50,668, June 29, 1970. This application July 14, 1972, Ser. No. 271,649
Int. Cl. G03c 5/04, 11/00
U.S. Cl. 96—27 R **10 Claims**

A transparent mask consisting of a patterned film of alpha Fe_2O_3 disposed on a glass substrate. The iron oxide film is substantially transparent to visible light and substantially opaque to ultraviolet light. The mask can therefore be aligned by the visible light passing therethrough and yet be used to expose a pattern in a layer of photoresist which is sensitive to the ultraviolet light passing through portions of the mask where the iron oxide film has been removed.

3,824,101
DIAZO-TYPE MULTICOLOR REPRODUCTION PROCESS
Kouzi Nihyakumen, Hirakata, Taizo Yokoyama, Osaka, Yasutoki Kamezawa, Hirakata, and Tatsuo Aizawa, Osaka, Japan, assignors to Mita Industrial Company, Limited, Osaka, Japan
Filed July 26, 1971, Ser. No. 166,061
Claims priority, application Japan, July 28, 1970, 45/65,393
Int. Cl. G03c 5/18, 1/58
U.S. Cl. 96—49 **10 Claims**



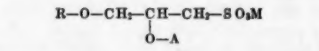
A process for the diazo-type multicolor reproduction which comprises conducting the steps of (A) exposing to light a diazo-type photosensitive material containing at least one diazonium salt through a transparent or semi-transparent original on predetermined portions of the back surface of which is applied at least one layer containing a thermovolatile or thermosublimative dyestuff or pigment and (B) heating the assembly of the original and the photosensitive material in a manner such that the



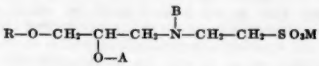
treated back surface of the original will be in a face-to-face contact with the photosensitive layer of the photosensitive material, the steps (A) and (B) being carried out coincidentally or in an order of (A) to (B) or (B) to (A), and then developing the exposed photosensitive material in the presence of a coupler.

3,824,102
PHOTOGRAPHIC COATING COMPOSITIONS
Masao Ishihara and Shui Sato, Tokyo, Eiichi Sakamoto, Hanno, and Osakazu Sugino, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan
No Drawing. Continuation of application Ser. No. 757,505, Sept. 4, 1968. This application Oct. 13, 1971, Ser. No. 189,036
Int. Cl. B01f 17/00; G03c 1/28, 1/40
U.S. Cl. 96—100 **8 Claims**

A photographic coating aid having the formula



or



wherein R is a hydrocarbon radical having 4–18 carbon atoms or a phenyl group having a C_{4-18} hydrocarbon radical, A is hydrogen or a lower acyl group, B is hydrogen or methyl and M is a cation, is incorporated into a photographic coating composition in an amount of 0.01 to 20 g./kg. of composition.

3,824,103
PHOTOGRAPHIC ELEMENT, COMPOSITION AND PROCESS HAVING AN S-CARBAMOYL STABILIZER
Zona R. Pierce and Grant M. Haist, Rochester, Jon T. Staples, Pittsford, and David A. Pupo, Churchville, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing Filed May 8, 1972, Ser. No. 251,728
Int. Cl. G03c 1/34
U.S. Cl. 96—109 **12 Claims**

S-carbamoyl silver salt stabilizer precursors are useful in photographic elements and compositions for stabiliz-

ing an image in processing by heat or by treatment with ammonia or amine vapors. The photographic elements and compositions can contain addenda employed in photographic materials such as silver halide developing agents.

3,824,104

SOLDER RESISTANT PHOTOPOLYMER COMPOSITION

Harold A. Kloczewski, Pasadena, and William R. Schaeffer, Baltimore, Md., assignors to W. R. Grace & Co., Washington Research Center, Columbia, Md.

No Drawing. Continuation-in-part of abandoned application Ser. No. 348,378, Apr. 5, 1973. This application May 24, 1973, Ser. No. 363,453

Int. Cl. G03c *1/70*

U.S. Cl. 96—115 R **1 Claim**

This invention relates to a heat and solder resistant solid photopolymer composition which can be imaged and developed and a process of using same. The solder resistant photocurable composition consists essentially of a solid diallyl phthalate prepolymer, i.e. poly-(diallyl orthophthalate) and a liquid polyene and polythiol. The solid composition when applied to a printed circuit board and cured imagewise in the presence of a free radical generator permits passage of the board through a bath of molten solder to secure electrical components thereto. When the free radical generator is actinic radiation, e.g., UV light, a curing rate accelerator, e.g., benzophenone is usually added to the composition.

3,824,105

HYDRAULIC-SETTING BONDING AGENT AND REFRACTORY COMPOSITIONS MADE THEREFROM

John J. Capellman, Tarentum, James C. Stultz, Lower Burrell, and Joseph E. Cooper, Brackenridge, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 4, 1973, Ser. No. 366,890

Int. Cl. C04b *35/02, 35/14*

U.S. Cl. 106—64 **18 Claims**

Disclosed is a hydraulic-setting bonding agent comprising a hydraulic-setting calcium aluminate and nepheline syenite. The bonding agent can be combined with water and an aggregate such as fused silica to form a castable refractory composition which may be cast and hardened to form a refractory body such as a gas hearth module. The nepheline syenite increases the cold strength provided by the hydraulic-setting calcium aluminate.

3,824,106

SELF-DEGRADABLE GLASS CONTAINERS

Paul B. Adams, Painted Post, Benjamin Justice, Corning, and Francis J. Marusak, Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,726

Int. Cl. C03c *19/00, 3/04, 3/30*

U.S. Cl. 106—52 **8 Claims**

The present invention relates to the production of glass articles and, in particular, containers having compositions within certain specifically-defined ranges of sodium silicate and potassium silicate glasses which are treated so as to cause self-degradation or disintegration into finely-divided particles. The glass articles should be under essentially zero compressive stress and the treatment thereof consists of placing fine flaws within the surface which will initiate cracking of the glass wall when contacted with moisture in the environment or immersion in liquid water.

3,824,107

MORTAR COMPOSITIONS CONTAINING MIXTURES OF HYDROXYALKYL CELLULOSES

David S. Weiant, Moorestown, N.J., assignor to AA Quality Construction Material, Inc., Morrestown, N.J.

No Drawing. Filed Jan. 28, 1972, Ser. No. 221,772

Int. Cl. C04b *7/02*

U.S. Cl. 106—93 **8 Claims**

Improved aqueous mortar compositions contain a minor amount of a mixture of (1) hydroxypropyl cellulose and (2) hydroxymethyl cellulose or hydroxyethyl cellulose or mixtures thereof. Compositions in accordance with the present invention can be formulated to effect quick solution and produce a stable viscosity through time and temperature conditions of use.

3,824,108

PROCESS FOR THE MANUFACTURE OF LOW-DENSITY NITROCELLULOSE GRANULES

Ernst-Joachim Stoetzer and Heinrich Wassmuth, Stolzenau, and Andreas Abraham, Botenberg, Germany, assignors to Dynamit Nobel A.G., Troisdorf, Germany

No Drawing. Filed May 5, 1969, Ser. No. 823,535

Claims priority, application Germany, May 4, 1968, P 17 71 313.2

Int. Cl. C08b *21/12*

U.S. Cl. 106—128 **14 Claims**

Process of preparing nitrocellulose granules having a bulk density of between 0.4 and 0.6 g./cm.^{3} from a nitrocellulose lacquer prepared by stirring under water nitrocellulose, stabilizers, and a nitrocellulose solvent insoluble in the water, adding to the lacquer still being stirred a protective colloid and a water-soluble alkali metal or alkaline earth metal salt, thereafter reducing the stirring speed whereupon the lacquer breaks up into drop-like particles, further reducing the stirring speed so as to cause the particles of lacquer to flow together again, making a second addition of protective colloid and salt, then increasing the stirring speed causing the lacquer to break up and form the desired particles and thereafter distilling off the solvent.

3,824,109

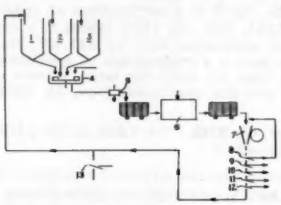
ROADS, AIRFIELD RUNWAYS AND THE LIKE

Dennis Maunder Richards, St. Austell, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England

Continuation of abandoned application Ser. No. 809,126, Mar. 21, 1969. This application June 20, 1972, Ser. No. 264,421

Int. Cl. C08h *13/00, 17/02;* **C09d** *3/24*

U.S. Cl. 106—281 R **13 Claims**



A method of producing an artificial roadstone suitable for use in a bituminous surfacing composition for roads,

airfield runways and the like. The method comprises the steps of (a) forming a mixture of a granular aggregate, a solid bonding material, and water, the granular aggregate and bonding material being present in specified proportions and sizes and having specified compositions, (b) compacting the mixture under a pressure of at least ½ long ton per square inch to form a coherent body, (c) hardening the coherent body, and (d) crushing the hardened coherent body to form the desired artificial roadstone.

3,824,110

ADDITIVE COMPOSITION

Alfred Pelz, Linz-Puchenau, and Franz Jilek, Gallneukirchen, Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz (Danube), Austria

No Drawing. Filed Mar. 9, 1973, Ser. No. 339,954

Claims priority, application Austria, Mar. 29, 1972, A 2,702/72

Int. Cl. C08f *45/52;* **C08h** *13/08*

U.S. Cl. 106—284 **7 Claims**

Thermoplastic plastics materials such as polyolefines are rendered metallisable by admixing them with an additive composition comprising 40 to 80% by weight of lithopone, calcium carbonate or calcium phosphate as inorganic filler, 20 to 60% by weight of a coal tar pitch an 0 to 25% by weight of an amorphous completely or predominantly saturated hydrocarbon polymer, whereby the inorganic filler has a particle size of at most 5μ.

3,824,111

NOVEL PIGMENT DISPERSANT

Robert D. Jerabek, Glenshaw, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 193,590, Oct. 28, 1971. This application Apr. 28 ,1972, Ser. No. 248,752

Int. Cl. C09c *3/02*

U.S. Cl. 106—308 N **4 Claims**

It has been found that basic nitrogen-containing adducts of glycidyl ethers or esters containing an acyclic hydrocarbon chain of at least eight carbon atoms with secondary amine or a tertiary amine salt are useful as grinding media in preparing stable pigment dispersions useful in water-soluble coating systems, for example, electrodepositable compositions.

3,824,112

PERMEABLE WOLLASTONITE CERAMIC MASS

Willis G. Lawrence, Alfred, and Leon B. Coffin, Andover, N.Y., assignors to Research Corporation, New York, N.Y.

Application July 1, 1970, Ser. No. 56,104, now Patent No. 3,641,229, which is a continuation of application Ser. No. 735,161, Feb. 23, 1968, which is a continuation-in-part of application Ser. No. 511,407, Dec. 3, 1965, which in turn is a continuation of application Ser. No. 194,048, May 11, 1962, the latter all now abandoned. Divided and this application Nov. 13, 1971, Ser. No. 195,509

Int. Cl. B28b *7/34;* **C04b** *21/00, 35/22*

U.S. Cl. 106—38.3 **1 Claim**

A permeable ceramic structure is prepared by forming a uniform admixture comprising finely divided, high melting point refractory ceramic material, finely divided fluxing material and hydrated silica gel, the melting point of the fluxing material being below the melting point of the refractory ceramic material. The resulting admixture is then heated to a temperature to dehydrate the silica gel and to fuse the fluxing material to provide a resulting permeable ceramic structure wherein the components thereof are held together by means of a glassy bond derived by fusing said fluxing material.

3,824,113

METHOD OF COATING PREFORMED CERAMIC CORES

Ted A. Loxley, Mentor, Harold L. Wheaton, Kensington, and John M. Webb, Chagrin Falls, Ohio, assignors to Sherwood Refractories Inc., Cleveland, Ohio

No Drawing. Filed May 8, 1972, Ser. No. 251,252

Int. Cl. B22c *3/00;* **B44d** *1/20*

U.S. Cl. 117—5.2 **29 Claims**

This invention relates to a method of coating preformed ceramic cores with a thin layer of a refractory oxide, said oxide serving as a reaction barrier between the ceramic core and molten metals containing reactive alloying elements. More specifically, this invention relates to a method of forming a continuous in situ coating on a ceramic core by immersing said core in a molten metal bath consisting of a non-reactive base of a solvent metal, such as nickel or cobalt, and at least one solute metal whose free energy of oxide formation is less than minus 160 kilocalories per mole of oxygen at 1260° C., such as aluminum, zirconium or hafnium.

3,824,114

METHOD OF APPLYING GRAFT COPOLYMER TO CELLULOSIC SUBSTRATE AND RESULTANT ARTICLE

Anthony E. Vassiliades, Deerfield, and David N. Vincent, Glenview, Ill., and Shrenik Shroff, Bombay, India, assignors to Champion International Corporation

No Drawing. Filed May 12, 1971, Ser. No. 142,772

Int. Cl. B44d *1/094*

U.S. Cl. 117—21 **22 Claims**

Discrete, substantially spherical microcapsules having a solid polymeric shell and a solid, non-tacky polymeric core, which is grafted to the polymeric shell, are provided. Such microcapsules may be coated onto cellulosic substrates or incorporated into such substrates and subsequently fused to provide cellulosic substrates having a polymeric film bonded thereto and increased strength, respectively. The grafting of the normally nonadherent core material to the shell of the microcapsules provides a means of forming a bond between a normally nonadherent polymer and a cellulosic material. The microcapsules may also be employed as load bearing agents and/or opacifying agents.

3,824,115

POLYVINYLIDENE FLUORIDE COMPOSITION AND COATING THEREOF

Masahiro Segawa and Yukichika Kawakami, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Original application June 3, 1970, Ser. No. 43,235, now abandoned. Divided and this application Oct. 20, 1971, Ser. No. 191,066

Claims priority, application Japan, June 12, 1969, 44/46,265

Int. Cl. B32b *15/08;* **B44d** *1/16*

U.S. Cl. 117—21 **4 Claims**

A metal surface is protectively powder coated with an undercoat and then with an overcoat of a polyvinylidene

fluoride, the ratio of the thicknesses of the overcoat and the undercoat being from 0.25 to 4, the undercoat being a composition prepared by mixing from 10 to 100 parts by weight of at least one inorganic substance having resistance to acids and alkalis with 100 parts by weight of at least one polyvinylidene fluoride which has an inherent viscosity from 0.6 to 1.4 and is a homopolymer or a copolymer containing at least 90 mol percent of vinylidene fluoride.

3,824,116

STENCIL SHEET AND METHOD OF MAKING AN IMAGED STENCIL SHEET

Bror E. Anderson, Arlington Heights, and Margery L. Schick, Mount Prospect, Ill., assignors to Weber Marking Systems, Inc., Arlington Heights, Ill.

No Drawing. Continuation-in-part of application Ser. No. 27,135, Apr. 9, 1970, now Patent No. 3,704,155. This application May 15, 1972, Ser. No. 253,358

Int. Cl. B41m *1/24*

U.S. Cl. 117—35.5 **17 Claims**

A stencil sheet of the type including an ink-impervious coating of a heat-flowable composition of thermoplastic film-forming material comprising a cellulose organic ester, and plasticizing material partially but incompletely compatible with the film-forming material, incorporates a polymeric hydrocarbon resin in the coating thereof for minimizing oil transfer from the stencil. The stencil sheet may be imaged thermographically and also mechanically in preferred embodiments.

3,824,117

STENCIL SHEET AND METHOD OF MAKING AN IMAGED STENCIL SHEET

Bror E. Anderson, Arlington Heights, Margery L. Schick, Mount Prospect, and Janis E. Wedyck, Arlington Heights, Ill., assignors to Weber Marking Systems, Inc., Arlington Heights, Ill.

No Drawing. Filed May 15, 1972, Ser. No. 253,394

Int. Cl. B41n *1/24*

U.S. Cl. 117—35.5 **19 Claims**

A stencil sheet of the type including an ink-impervious coating of a heat-flowable composition of thermoplastic film-forming material comprising a cellulose organic ester, and plasticizing material partially but incompletely compatible with the film-forming material, incorporates an alkylene oxide ester of a fatty acid or an alkylene oxide ether of a fatty alcohol in the coating thereof for enhancing stencil sheet durability. Preferably, a polymeric hydrocarbon resin also is included for minimizing oil transfer from the stencil. The stencil sheet may be imaged thermographically, and mechanically in preferred embodiments.

3,824,118

PROCESS OF PRODUCING INK SHEET

Masayoshi Tsuboi, Yasushi Yano, and Yoshiaki Suzuki, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Kanagawa, Japan

No Drawing. Continuation of abandoned application Ser. No. 840,501, July 9, 1969. This application Jan. 14, 1972, Ser. No. 218,008

Claims priority, application Japan, July 9, 1968, 43/48,022

Int. Cl. B41m *5/22*

U.S. Cl. 117—36.2 **2 Claims**

Process for producing ink sheet to be employed as the ink source in a stencil printing process comprising forming an organic solvent solution of a high molecular weight compound and a colorless leuco dye which is capable of forming a colored dye upon contact with an acidic material and applying said solution to a support.

3,824,119

PRESSURE SENSITIVE COPY PAPER EMPLOYING DIBENZYLAMINO FLUORAN COMPOUNDS

Mutsuo Terayama and Kenji Yamamoto, Yao, Japan, assignors to Yamamoto Kagaku Gosei K.K.

No Drawing. Original application Mar. 10, 1971, Ser. No. 123,069. Divided and this application Sept. 14, 1972, Ser. No. 288,993

Claims priority, application Japan, July 8, 1970, 45/59,711

Int. Cl. B41c *1/06;* **B41m** *5/00*

U.S. Cl. 117—36.2 **15 Claims**

New fluoran compounds containing a dibenzylamino group or a nuclear substituted derivative thereof are provided by a novel method involving the reaction of an aminofluoran and a benzyl chloride in the presence of alkali in an inert non-polar organic solvent. The dibenzylamino fluorans are incorporated as a remarkably effective color former in pressure sensitive copying paper.

3,824,120

SILICON NITRIDE ARTEFACTS

Roger William Davidge, Wantage, and Anthony Glyn Evans, Didcot, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed June 25, 1971, Ser. No. 156,712

Claims priority, application Great Britain, July 1, 1970, 32,011/70

Int. Cl. C23c *11/08;* **C23d** *5/00*

U.S. Cl. 117—98 **5 Claims**

Increased strength is imparted to porous silicon nitride by subjecting the silicon nitride to controlled oxidation such that the surfaces of the internal pores are oxidized.

3,824,121

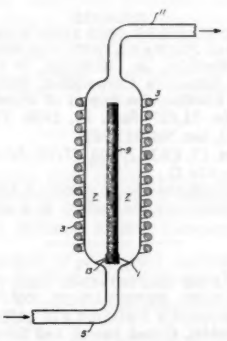
PRODUCTION OF SILICON METAL FROM DICHLOROSILANE

Howard B. Bradley, St. Marys, W. Va., and Maurice H. Jellinek, Stamford, Conn., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of application Ser. No. 80,645, Oct. 14, 1970, which is a continuation-in-part of applications Ser. No. 874,444 and Ser. No. 874,445, both Nov. 6, 1969, all now abandoned. This application Aug. 21, 1972, Ser. No. 282,107

Int. Cl. C23c *11/00*

U.S. Cl. 117—106 A **7 Claims**



The process of producing silicon metal from a chlorosilane whereby to obtain improved yields and rates of production of silicon metal, based on the amount of silicon in the chlorosilane used to produce the silicon metal, which comprises providing dichlorosilane gas in

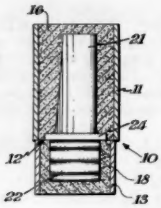
admixture with hydrogen gas in a reaction zone having a temperature sufficient to effect the reduction and decomposition of said dichlorosilane to silicon metal and maintaining the temperature at which said reaction is effected and the residence time of said dichlorosilane in said reaction zone sufficient to provide yields of silicon metal of at least 50 percent. In addition, this process provides a substantial reduction in the amount of by-product $SiCl_4$ as compared with silicon metal making processes which employ trichlorosilane as the silicon source.

3,824,122

CONTINUOUS DIFFUSION COATING

George H. Cook, 803 D Cloister Road, Wilmington, Del. 19809, and Alfonso L. Baldi, 1100 Turner Ave., Drexel Hill, Pa. 19026

Filed July 2, 1971, Ser. No. 159,175
Int. Cl. C23c *13/02*
U.S. Cl. 117—107.2 P **16 Claims**



Workpieces are diffusion coated by packing them singly in individual snugly fitting retorts with a diffusion coating pack, heating the packed retorts to diffusion coating temperature for a time adequate to effect the desired coating, and then rapidly cooling the retorts. The small amount of pack surrounding the workpiece permits very rapid cooling without the need to apply a cooling liquid to these small retorts, and entire coating operation is accordingly well suited for coating nickel-base superalloys that should before use be subjected to solution heat treatment and rapid cooling with or without subsequent aging. The diffusion coating can then be conducted under solution heat treating conditions. Tubular retorts can be used.

3,824,123

NOVEL GLASSES AND PROCESSES FOR THE PREPARATION THEREOF

Herbert D. Kivlighn, Jr., Bethpage, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 71,427, Sept. 11, 1970. This application Dec. 5, 1972, Ser. No. 311,962
Int. Cl. C03c *17/00, 17/06, 21/00*
U.S. Cl. 117—124 C **10 Claims**

A process disclosed for producing a thin film of elemental germanium on the surface of a germanate glass composition.

3,824,124

PROCESS FOR IMPROVING THE THERMAL SHRINKAGE RESISTANCE OF LEATHER AND PRODUCT PRODUCED THEREBY

Alfred O. Minklei, Grand Island, and John A. Peterson, Niagara Falls, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed May 4, 1972, Ser. No. 250,208
Int. Cl. C14c *9/00;* **C09k** *3/28*
U.S. Cl. 117—138 **17 Claims**

Leather having durable resistance to shrinkage on exposure to high temperatures as occasioned by flash fires is produced by pretreating the leather by immersion in an aqueous alkali metal or ammonium salt solution and thereafter impregnating the pretreated leather with a salt of a metal selected from the group consisting of the transition metals of the 4th and 5th periods of the Periodic Table and magnesium. Preferably a solution of sodium bicarbonate, disodiumphosphate, diammonium phosphate or tetra sodium pyrophosphate is used to pretreat the leather and nickel or magnesium salts, especially the sulfates, are used to impregnate the pretreated leather.

3,824,125

SOIL RELEASE COMPOSITION

Everett H. Hinton, Jr., Raleigh, N.C., and Larry E. Avery, Cheraw, S.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

No Drawing. Continuation-in-part of application Ser. No. 747,473, July 25, 1968, now Patent No. 3,650,801. This application July 28, 1971, Ser. No. 176,368
The portion of the term of the patent subsequent to Mar. 21, 1989, has been disclaimed
Int. Cl. D06m *15/36*
U.S. Cl. 117—138.8 F **14 Claims**

Two hydrophi.ic acrylic polymers, preferably together with a higher trialkyl trimellitate, are employed in the washing of textiles in a laundry to improve the soil release properties. If desired a durable press resin can also be incorporated.

3,824,126

OIL- AND WATER-REPELLENT COMPOSITION CONSISTING OF A FLUORINE CONTAINING POLYMER, SELECTED SALTS AND AN ANTISTATIC AGENT

Atsuo Katsushima, Iwao Hisamoto, Shoshin Fukui, Takahisa Kato , Masayuki Nagai, and Akitoshi Iwatani, Osaka-fu, Japan, assignors to Daikin Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Continuation of abandoned application Ser. No. 816,082, Apr. 14, 1969. This application Aug. 9, 1971, Ser. No. 170,363
Claims priority, application Japan, Apr. 16, 1968, 43/25,671, 43/25,672
Int. Cl. C08f *29/16, 45/56;* **C09k** *3/16*
U.S. Cl. 117—139.5 R **12 Claims**

An oil-repellent and water-repellent composition which consists of an aqueous composition containing a fluorine-containing polymer having a side chain containing perfluoroalkyl group of 3 to 21 carbon atoms in the concentration of 0.1 to 10 weight percent, a water-soluble salt in the range of 0.01 to 10 times the weight of said fluorine-containing polymer and an external permanent antistatic agent in an amount of from 0.1 to 20 times the weight of said fluorine-containing polymer; and a process for imparting oil- and water-repellent properties to fibrous materials, which comprises the step of wetting the fibrous material with said aqueous composition and drying the treated fibrous material.

3,824,127

DISC CAPACITOR SILVER COMPOSITIONS

Joel Alfred Conwicke, Youngstown, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

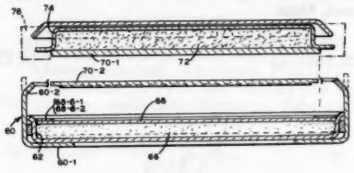
No Drawing. Filed Dec. 22, 1971, Ser. No. 211,079
Int. Cl. H01b *1/02;* **H01g** *1/00*
U.S. Cl. 117—227 **6 Claims**

In silver metallizing compositions useful in producing electrodes for disc capacitors, the improvement of adding nickel, tantalum or mixtures thereof to prevent sticking between electrodes of contiguous capacitors during firing. A process using such improved compositions and disc capacitors made therewith.

3,824,128
MAGNETIC RECORDING MEDIUM
Goro Akashi, Tatsuji Kitamoto, and Massaki Fujiyama, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation-in-part of abandoned application Ser. No. 864,482, Oct. 7, 1969. This application May 24, 1972, Ser. No. 256,245
Claims priority, application Japan, Nov. 6, 1968, 43/81,068
Int. Cl. H01j *1/26*
U.S. Cl. 117—235 9 Claims

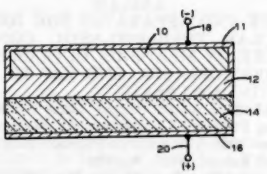
A magnetic recording medium having a magnetic recording layer in which is dispersed in a binder a ferromagnetic powder comprising a mixture of an iron oxide powder and a chromium dioxide powder in a weight ratio of 1:4 to 4:1 respectively, and possessing improved sensitivity to short wave-length signals, particularly even after being subjected to heat.

3,824,129
HEART PACER RECHARGEABLE CELL AND PROTECTIVE CONTROL SYSTEM
Franklin G. Fagan, Jr., Ossining, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Mar. 14, 1973, Ser. No. 341,205
Int. Cl. H01m *43/00*
U.S. Cl. 136—6 R 9 Claims



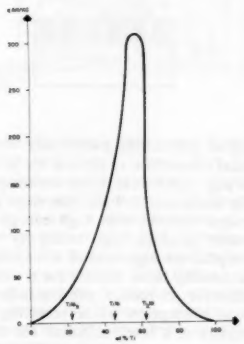
A heart pacer system having an electric cell with improved internal cell structure and control system, with relatively high-conductivity depolarizer to accept recharging, in place as implanted, by induction and through a rectification system, at relatively fast rate, with protective control system to prevent harmful effects in the cell, and thereby to assure safety to the wearer during recharging, with an end result of service from the implanted cell in excess of ten years, without need for an incision to replace implanted cell by a new cell.

3,824,130
CATHODE MATERIAL FOR SOLID STATE BATTERIES
Charles Chi Liang, Andover, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed Nov. 2, 1972, Ser. No. 303,181
Int. Cl. H01m *11/00*
U.S. Cl. 136—83 R 15 Claims



High energy density solid electrolyte cells are provided employing light metal anodes and metal sulfate cathodes. These cells employ lithium anodes, and the cathodes comprise a metal sulfate selected from the group consisting of the sulfates of lead, tin, copper, mercury, silver, calcium, and lithium. The preferred electrolyte comprises a composition containing lithium iodide, lithium hydroxide and aluminum oxide, although the alkali metal halides are also suitable for such use.

3,824,131
NEGATIVE ELECTRODE OF TITANIUM-NICKEL ALLOY HYDRIDE PHASES
Klaus Beccu, 46 Chemin Sous-le-Cret, Troinex, Geneva, Switzerland
Continuation-in-part of application Ser. No. 29,740, Apr. 24, 1970, now Patent No. 3,669,745, which is a continuation of abandoned application Ser. No. 726,234, May 2, 1968. This application Apr. 6, 1972, Ser. No. 241,525
Int. Cl. H01m *35/02*
U.S. Cl. 136—20 7 Claims



An improved negative electrode in an electrochemical energy storage cell for generating electric current, comprising the negative electrode, an alkaline electrolyte and a positive oxygen or oxide electrode. The negative electrode comprises a porous body with a current conducting support and an active component providing reversible hydride formation by electrochemical charge and discharge. The active component consists essentially of two coexistent alloy hydride phases in mutual contact along extensive phase boundaries throughout the component. Both phases have a lattice structure formed essentially from the titanium-nickel system, one phase having a body-centered cubic structure and the other a face-centered cubic structure. Improved electrochemical discharge and recharge is provided by hydrogen transfer between the two phases.

3,824,132
METHOD FOR IMPROVING WEAR CHARACTERISTICS OF BRONZE
Robert L. Wolfe and Augustine Trebnik, Columbus, Ind., assignors to Reliance Electric Company, Cleveland, Ohio
Continuation-in-part of abandoned application Ser. No. 66,391, Aug. 24, 1970. This application July 21, 1972, Ser. No. 274,114
Int. Cl. C22f *1/08*
U.S. Cl. 148—13.2 13 Claims

The method of improving the wear or durability characteristics of bronze by heating the bronze to a temperature between approximately 968° F. and 1470° F., holding the attained elevated temperature for a period of time, and then subsequently cooling the bronze. The bronze may be held at the elevated temperature for a relatively short period of time such as, for instance, 15

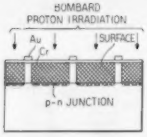
seconds. The cooling step may include air cooling the bronze down to approximately 700° F. to 800° F. and then liquid quenching the bronze down to room temperature.

3,824,133

FABRICATION OF ELECTRICALLY INSULATING REGIONS IN OPTICAL DEVICES BY PROTON BOMBARDMENT

Lucian Arthur D'Asaro, Madison, John Cameron Dyment, Chatham, Matthew Kuhn, Warren, and Stuart Marshall Spitzer, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 2, 1971, Ser. No. 204,222
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **33 Claims**



A method of fabricating electrically insulating regions of low optical absorption in optical devices, such as junction lasers and incoherent light emitting diodes, is described. The technique includes the steps of (1) irradiating the desired regions with high energy protons which advantageously produce high resistivity but disadvantageously also produce high optical absorption and (2) subsequently annealing these regions for a time and at a temperature effective to reduce substantially the proton-induced optical absorption while retaining the proton-induced resistivity at a level sufficient for electrical insulation. Detailed parameters for irradiating and annealing are given for GaAs and GaP. Specifically described are applications of this technique in the passivation of p-n junctions and in the fabrication of stripe geometry junction lasers.

3,824,134

METALLIDING PROCESS

Maynard R. Chance, Houston, Tex., assignor to Thornhill-Craver Company, Houston, Tex.

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,524
Int. Cl. C23c *11/12*
U.S. Cl. 148—6 **2 Claims**

A metalliding process for producing extremely hard metallic boride surface layers on steel bodies wherein the steel is carburized and treated with a nonferrous metal to produce a barrier layer of metallic carbide and boronized to produce the surface layer of metallic borides. This abstract is neither intended to define the invention of the application, which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,824,135

COPPER BASE ALLOYS

Michael J. Pryor, Woodbridge, Stanley Shapiro, New Haven, and Richard D. Lanam, Hamden, Conn., assignors to Olin Corporation

No Drawing. Filed June 14, 1973, Ser. No. 369,914
Int. Cl. C22c *9/06*; C22f *1/08*
U.S. Cl. 148—32.5 **6 Claims**

The disclosure teaches novel copper base alloys having improved toughness and outstanding resistance to stress corrosion. The copper alloys contain, in weight percentages, from 15 to 30% nickel, from 15 to 30% manganese, an element selected from the group consisting of aluminum from 0.01 to 5%, magnesium from 0.01 to 5%, boron from 0.001 to 0.1%, zinc from 0.1 to 3.5%, tin from 0.01 to 3%, zirconium from 0.01 to 2%, titanium from 0.01 to 2%, chromium from 0.01 to 1%, iron from 0.1 to 5%, cobalt from 0.05 to 1%, and mixtures thereof, together with 0.005 to 0.1% of an element selected from the group consisting of arsenic and antimony, and mixtures thereof.

3,824,136

ETCHING OF ALUMINUM FLUIDIC DEVICES

Kenneth E. Gilbert, Port Jervis, N.Y., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Oct. 6, 1972, Ser. No. 295,784
Int. Cl. C23f *1/02*
U.S. Cl. 156—8 **5 Claims**

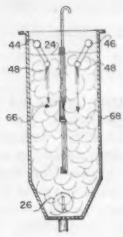
A method for chemical milling of thin aluminum sheets, such as wafers for fluidic control systems, which produces smoother cuts and minimizes rough edges and undercutting, utilizes an aqueous etching solution of about 8°–15° Baumé containing about 75–150 grams $FeCl_3$ and about 6.5–11.5 gram HCl per liter.

3,824,137

SOLUTION AGITATION PROCESS

Hendrik F. Bok, Fairhaven, and Eugene St. Onge, Freetown, Mass., assignors to In-Line Technology, Inc., Assonet, Mass.

Filed Apr. 18, 1973, Ser. No. 352,399
Int. Cl. B08b *3/00*; C23b *5/02*; C23f *1/00*
U.S. Cl. 156—18 **10 Claims**



A solution agitation process and system to provide a uniform and controlled turbulent flow of treatment liquid over both sides of a flat substrate which is suspended in a treatment solution, wherein a directed liquid spray pattern below the treatment solution level creates parallel, flowing walls of solution running downward through the tank and on each opposite side of the substrate.

3,824,138

PROCESS AND APPARATUS FOR JOINING A TUBULAR THERMOPLASTIC CONTAINER JACKET, BY MEANS OF ULTRASONICS, TO A THERMOPLASTIC END CAP TO FORM A LIQUID-TIGHT SEAL

Ernst Karobath, Leopold Rippel, Hans Schmidinger, and Wolfgang Pulitzer, Vienna, Austria, assignors to Firma Telephon- und Telegraphen-Fabriks-Aktiengesellschaft Kapsch & Sohne, Wien, Austria

Filed Dec. 7, 1971, Ser. No. 205,583
Claims priority, application Austria, Dec. 10, 1970, A 11,131/70; Apr. 5, 1971, A 2,907/71
Int. Cl. B29c *27/08*
U.S. Cl. 156—69 **7 Claims**

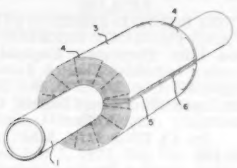
In a process and apparatus for joining a tubular thermoplastic container jacket, by means of ultrasonics, to

a thermoplastic end cap to form a liquid-tight seal, the end cap is inserted into the jacket so that the jacket rim projects beyond the cap, and an axially-oscillating sonotrode is advanced axially against the jacket rim to soften the jacket rim and roll it inwardly over the rim of the cap. The softened jacket rim is trapped in an annular chamber formed between the sonotrode and the cap, and further advancement of the sonotrode applies welding pressure to the softened jacket rim.

3,824,139
PLASTICS LAMINATE
Gareth Jay, Ware, and Edward Wardman, Hitchin, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Aug. 18, 1972, Ser. No. 281,798
Int. Cl. B32b *5/18*
U.S. Cl. 156—79 **6 Claims**

Making foam/film laminates by coextruding a layer of plastics material forming a non-foamed film and a layer containing water as a foaming agent, preferably with the addition of a small proportion of a gas-generating substance, and bringing the layers into contact while still in a heat-softened state, preferably before extrusion.

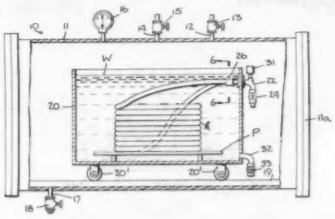
3,824,140
METHOD OF INSULATING DUCTS
Albert Hofmann, Grunwald, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed June 12, 1972, Ser. No. 261,692
Claims priority, application Germany, June 11, 1971, P 21 29 071.1
Int. Cl. B32b *33/00*
U.S. Cl. 156—90 **19 Claims**



A method of insulating ducts, e.g. pipes adapted to constitute or carry cryogenic conductors and a duct-insulating system wherein a multilayer laminated insulation is prepared, preferably around a mandrel, is longitudinally split for removal from the mandrel and then is applied around the duct to be insulated. The layers may alternate metal foil with insulating layers, e.g. of a fabric composed of filaments of thermally nonconductive material. The insulation is preferably enclosed in an evacuated pipe.

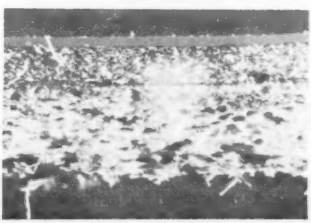
3,824,141
MANUFACTURE OF VULCANIZED ELASTOMERIC HOSE
Robert Miller, Woodbridge, and Carl Derderian, Cheshire, Conn., assignors to Uniroyal, Inc., New York, N.Y.
Filed Aug. 29, 1972, Ser. No. 284,563
Int. Cl. B29c *25/00*
U.S. Cl. 156—143 **32 Claims**

A batch process for vulcanizing reinforced elastomeric hose, which avoids the use of the lead press method, is disclosed. The process basically entails annularly clamping the opposite ends of the uncured hose so as to prevent entry of fluid pressure into the space between any two proximate layers of elastomeric material occupied by a layer of reinforcement, immersing the hose in a bath of liquid, e.g. water, sufficient to cover the hose substantially completely, and then in a pressurized heating environment, e.g. in a steam-filled vulcanizer or autoclave, subjecting the uncured hose at both its inner and its outer surfaces to the action of a pressurized heating fluid at the desired vulcanizing temperature. The process may be practiced with the hose either filled with a liquid such as water or empty, and so that either the same pressure is



applied to both said hose surfaces or a higher pressure is applied to the inner hose surface than to the outer one. The hose interior may be opened or closed at its opposite ends to the autoclave interior. If closed, the hose is filled with liquid and a pressure relief valve is preferably provided to ensure that the pressure within the hose cannot exceed the pressure around the hose by more than a predetermined amount. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

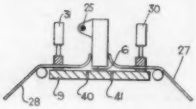
3,824,142
METHOD OF PREPARATION OF A SUPPLE SHEET COMPOSITION
Lawrence W. Healy, Johnsonville, S.C., and Wu Lan Wang, Newark, and Joseph I. Gross, Short Hills, N.J., assignors to Tenneco Chemicals, Inc., New York, N.Y.
Division of application Ser. No. 89,223, Nov. 13, 1970, now Patent No. 3,764,454. Continuation-in-part of abandoned applications Ser. No. 719,219, Apr. 5, 1968, and Ser. No. 49,964, June 25, 1970, said application Ser. No. 49,964 being a division of said application Ser. No. 719,219. This application Dec. 22, 1972, Ser. No. 317,727
Int. Cl. B32b *7/08*
U.S. Cl. 156—148 **9 Claims**



Leather replacement products are prepared by needling a fleece into a polyurethane foam, needling a second fleece

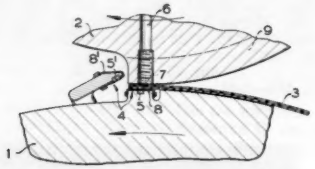
onto the resulting web and depositing a polyurethane elastomer into the void spaces and interstices of the resulting products.

3,824,143
METHOD OF SPLICING OF WEB MATERIAL
Ronald Charles Cooper and Alan Albert Aldridge, Ilford, England, assignors to Ilford Limited, Essex, England
Filed Jan. 21, 1972, Ser. No. 219,668
Claims priority, application Great Britain, Jan. 27, 1971, 3,307/71
Int. Cl. B31f *5/00;* **B65h** *19/00, 69/02;* **G03d** *15/04*
U.S. Cl. 156—157 **1 Claim**



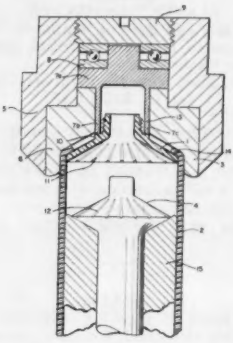
A method of splicing together the ends of two abutted webs is described. In this method a tape dispensing device which contains a roll of pressure-sensitive adhesive tape wound together with a release-surface backing tape is traversed across the abutted ends of the webs laying down a strip of adhesive tape and at the same time separating the backing tape and rolling it up.

3,824,144
METHOD OF IMPULSE WELDING LAYERS OF PLASTIC MATERIAL
Frank Bosse, Ibbenburen-Dorenthe, Germany, assignor to Windmoller & Holscher, Lengerich, Westphalia, Germany
Filed Oct. 19, 1971, Ser. No. 190,644
Claims priority, application Germany, Oct. 22, 1970, P 20 51 997.5
Int. Cl. B32b *31/20;* **C09j** *5/00*
U.S. Cl. 156—306 **2 Claims**



A method of welding layers of plastics bag material in which heat is applied to welding jaws in impulses, the welded portion being removed from the jaws before the weld has solidified, preferably after termination of each heat impulse and within a time equal to the duration of one impulse. In apparatus for performing this method, one of a pair of welding jaws is controlled to open and close by a cam designed so that said one jaw remains closed for no longer than twice the duration of one impulse. Suction means may be employed to facilitate removal of each welded bag from the jaw that is not cam-controlled.

3,824,145
APPARATUS FOR BONDING A THERMOPLASTIC TUBULAR PART TO THE PERIPHERY OF A THERMOPLASTIC TUBE HEAD
Valer Flax, Vic-Fezensac, France, assignor to Continentalplastic AG., Zug, Switzerland
Original application June 4, 1970, Ser. No. 43,428, now abandoned. Divided and this application Oct. 25, 1972, Ser. No. 300,792
Claims priority, application Switzerland, June 4, 1969, 9,526/69
Int. Cl. B29c *27/08*
U.S. Cl. 156—580 **2 Claims**



In a method of manufacturing a tube of thermoplastic material, a head and a tubular part of thermoplastic material are bonded together by friction welding, i.e. by a very rapid rotation of the head catched between a rotary tool and a cap.

3,824,146
PROCESS FOR BONDED FIBROUS STRUCTURE AND PRODUCT THEREOF
Vincent Simon Ellis, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Dec. 20, 1971, Ser. No. 210,118
Claims priority, application Great Britain, Dec. 23, 1970, 61,169/70
Int. Cl. D04h *3/14, 1/54*
U.S. Cl. 161—150 **11 Claims**

Manufacture of adherent fibrous structure from fibers with a proportion of the surface being potentially adhesive, activation of the potential adhesive to form bonds, followed by chemical treatment of the adhesive to render it no longer potentially adhesive.

3,824,147
WEATHER-RESISTANT, SAND COATED EXTERIOR GYPSUM BOARD AND WALL
James W. Baird, Arlington Heights, Ill., assignor to United States Gypsum Company, Chicago, Ill.
No Drawing. Filed May 26, 1972, Ser. No. 257,211
Int. Cl. B32b *3/26*
U.S. Cl. 161—162 **12 Claims**

Exterior gypsum wallboard and wall assembled therefrom made weather-resistant by a coating of sand aggregate, emulsion binder, and optionally a filler or pigment.

3,824,148
ADHESION PROCESS AND ARTICLE OBTAINED THEREBY
George Lopatin, Orinda, Calif., assignor to Shell Oil Company, Houston, Tex.
No Drawing. Filed May 11, 1972, Ser. No. 252,396
Int. Cl. B32b *27/32, 31/12*
U.S. Cl. 161—188 **5 Claims**

An adhesively bonded article is obtained by depositing certain anionically substituted block copolymers on one

substrate, depositing a cationically substituted block copolymer on a second substrate and contacting the two polymers in the presence of water whereby an adhesively bonded article is formed.

3,824,149

METHOD OF HALOGENATING AND ADHERING THERMOPLASTIC ELASTOMERIC BLOCK COPOLYMERS

James T. Harlan, Jr., Torrance, Calif., and Donald Pettit, Isham, Frederick B. Blackwell, Seagrave, and Alan R. Carter, Kettering, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 852,483, Aug. 22, 1969. This application July 7, 1972, Ser. No. 269,657

Claims priority, application Great Britain, Aug. 22, 1968, 40,166/68

Int. Cl. A43b *9/12;* **B32b** *27/40;* **C09j** *5/02*

U.S. Cl. 161—190 **5 Claims**

An improved method of adhering unvulcanized thermoplastic elastomeric block copolymers of monovinyl arenes and conjugated dienes with adhesives based upon polychloroprene or polyurethane comprising a preliminary surface halogenation treatment of the block copolymer.

3,824,150

ENZYME BOUND TO POLYMERIC SHEET WITH A TRIAZINE BRIDGING GROUP

Malcolm Douglas Lilly, Garth Kay, Richard John Hugh Wilson, and Alister Kimball Sharp, London, England, assignors to National Research Development Corporation, London, England

Filed July 5, 1968, Ser. No. 742,901

Claims priority, application Great Britain, July 14, 1967, 32,541/67; Apr. 10, 1968, 17,322/68

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **9 Claims**

A method of carrying out an enzymatic reaction which comprises contacting a liquid medium containing a substance which is capable of being chemically altered by an enzyme with a permeable or impermeable sheet that comprises an enzyme chemically bonded to an insoluble support and recovering a product of the reaction.

3,824,151

APPARATUS FOR AEROBIC FERMENTATION

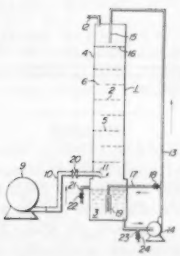
Tokuji Iijima, Yohji Odawara, Tetsuo Yamaguchi, and Hayao Yahagi, Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 7, 1971, Ser. No. 160,304

Claims priority, application Japan, July 13, 1970, 45/60,636; Mar. 19, 1971, 46/15,135

Int. Cl. C12b *1/14*

U.S. Cl. 195—142 **14 Claims**



Supply of oxygen to microorganisms and removal of the heat of fermentation in the fermentation of aerobic microorganisms are carried out by gas-liquid contact of a culture medium dispersed in a droplet state or film state with the air, whereby the oxygen can be dissolved into the culture medium and at the same time the heat of fermentation can be removed as a sensible heat and latent heat. Cooling water for removing the heat of fermentation can be also saved thereby, and total power requirement can be reduced at the same time.

3,824,152

TWIN WIRE PAPER FORMING WITH ONE WIRE WRAPPING A SUCTION CYLINDER

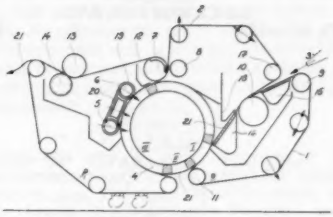
Pentti Nevalainen, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Mar. 21, 1973, Ser. No. 343,401

Claims priority, application Finland, Mar. 24, 1972, 832/72

Int. Cl. D21f *1/00, 2/00*

U.S. Cl. 162—301 **5 Claims**



Apparatus for forming a fibrous web wherein a headbox discharges fibrous suspension between a first endless forming wire and a second endless forming wire which together form a nip upstream of a suction cylinder. The first wire wraps around a large portion of the surface of the suction cylinder whereas the second wire proceeds with the first wire around only a portion of the suction cylinder. An endless felt is supported to wrap around the suction cylinder in conjunction with the first wire downstream of the second wire to press and dewater the web. At least one suction box is positioned adjacent the second wire upstream of the suction cylinder, and a pressing mat employed in conjunction with a pressure box may be provided adjacent the suction cylinder for applying pressure to the felt as it wraps the suction cylinder.

3,824,153

NUCLEAR REACTOR FUEL ASSEMBLY SPACER GRID

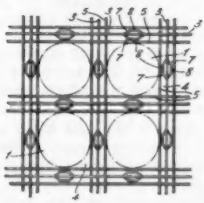
Bernard Leaver, Atherton, and Thomas Seddon, St. Annes, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed June 26, 1972, Ser. No. 266,042

Claims priority, application Great Britain, July 7, 1971, 32,004/71

Int. Cl. G21c *3/34*

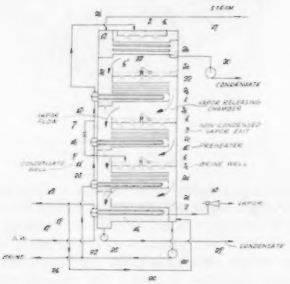
U.S. Cl. 176—78 **2 Claims**



A spacer grid in a fuel element assembly including a plurality of elongate fuel pins supported in a bundle with their longitudinal axes parallel comprises a rigid grid structure of intersecting cross members defining cells each of which is penetrated by a fuel pin of the assembly and

resilient strip members slotted through the grid structure parallel to the cross members, the resilient strip members providing transverse support for the fuel pins in the cells of the grid structure and stop means being formed projecting from the cross members inside the cells and underlying the strip members in the cells.

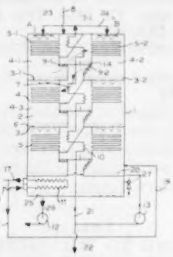
3,824,154
EVAPORATING METHOD AND APPARATUS
Masaharu Takada, Toyonaka, Koichi Yamada, Nishinomiya, and Kozo Hamahata, Takarazuka, Japan, assignors to Sasakura Engineering Co., Ltd., Osaka, Japan
Filed July 6, 1971, Ser. No. 159,831
Claims priority, application Japan, July 8, 1970, 45/60,049
Int. Cl. B01d *1/26, 3/02*
U.S. Cl. 202—174 **8 Claims**



An evaporating system, characterized in that a shell is sectioned with substantially horizontal partition walls, with a plurality of effective units which operate under different pressures are arranged in the vertical direction in the order of pressure, with the unit of higher pressure located upwardly. Brine remained in the bottom of an upper effective unit is spread over the next effective unit of lower pressure from jet holes provided at the partition wall by the head of the brine and pressure difference between the two effective units. A part of the brine is flash-evaporated and the remainder is distributed to the outer surface of a heat transfer tube in the effective unit of lower pressure. The brine is heated by steam generated in the upper effective unit and is partly condensed.

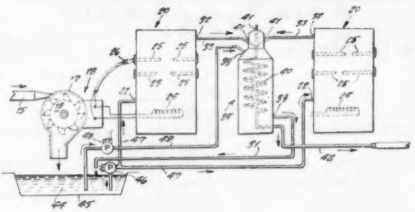
3,824,155
MULTIPLE EFFECT EVAPORATING APPARATUS
Masaharu Takada, Osaka, Japan, assignor to Sasakura Engineering Co., Ltd., Osaka, Japan
Filed May 12, 1972, Ser. No. 252,764
Claims priority, application Japan, May 14, 1971, 46/32,690
Int. Cl. C02b *1/06*
U.S. Cl. 202—174 **8 Claims**

A multiple effect evaporating apparatus has a plurality of vertical columns of effects, each column having an effect on the same level as each of the adjacent columns. Each effect has (1) a bundle of horizontal tubes above the bundle of tubes in the next lower effect, (2) a raw material liquid collecting means below the bundle of tubes having means therethrough for passing the collected liquid to the next lower effect, (3) a vapor inlet passage at one end of the bundle of tubes into which the tubes of the bundle open for permitting vapor to flow from the vapor inlet passage into the tubes, (4) a vapor outlet passage at the other end of the tubes into which the tubes open, and (5) a mist separator adjacent and along the bundle of tubes one side of which is in communication with the raw material liquid collecting means and the other side of which is in communication with the vapor outlet passage. The effects at the same level in the columns are positioned with the vapor inlet passages of all but one of the effects immediately adjacent and in communication with the vapor outlet passage. The effects at the level in the columns are positioned with the vapor inlet passages of all but one of the effects immediately adjacent and in communication with the vapor outlet passage of the next preceding effect in the direction of vapor flow through the effects. The vapor inlet of the one of the effects in each



stage is immediately adjacent, when viewed in plane view and immediately below, when viewed in elevation, and in communication with the vapor outlet passage of the next preceding effect in the next higher level of effects in said apparatus. Means is provided for feeding steam to the vapor inlet passage of the one effect in the highest level of effects and for feeding raw material liquid to each of the bundles of each of the effects in the highest level of effects, and means is provided for collecting from the successive vapor inlet passages the condensate which condenses from the vapor therein.

3,824,156
DESALINIZATION SYSTEM
Alphonso Griffin, 1308 Seldon Ave., Norfolk, Va. 23523
Filed Feb. 8, 1972, Ser. No. 224,541
Int. Cl. B01d *3/02*
U.S. Cl. 202—180 **6 Claims**



A system and apparatus for removing salt from sea water so to render it into fresh water for drinking, washing and other practical purposes; the apparatus consisting of a station to which salt sea water is piped, the station having electric generators driven by a turbine powered by the incoming salt water, the station including boiler tanks in which the salt water is boiled so that steam therefrom is piped to a condenser from which distilled, pure fresh water is piped to a fresh water storage reesrvoir, and the electric generator supplying energy to electric heaters for boiling the salt water, driving pumps and powering all the equipment at the station.

ERRATUM

For Class 203—18 see:
Patent No. 3,824,177

3,824,157

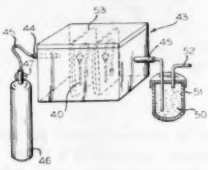
METHOD OF EQUILIBRATING AND CALIBRATING A PARTIAL PRESSURE GAS SENSOR

Robert A. Macur, Milwaukee, Wis., assignor to General Electric Company

Original application Jan. 29, 1971, Ser. No. 110,957, now Patent No. 3,719,576. Divided and this application Sept. 18, 1972, Ser. No. 290,020

Int. Cl. G01n *27/00*

U.S. Cl. 204—1 T **8 Claims**



A sensor of the partial pressure of carbon dioxide in blood, other fluid, or gaseous mixture comprises a reference half-cell and a sensing half-cell immersed in a common electrolyte comprising chloride and bicarbonate ions. The sensing half-cell may be palladium-palladium oxide (Pd-PdO) or iridium-iridium oxide (Ir-IrO) and the reference half-cell may be silver-silver halide. The sensing half-cell is a wire coated at its distal end with its own oxide. The reference half-cell may be a silver tube which is coated on its tip with silver halide and slipped over an insulated section of the wire. The distal ends of the tube and wire are dipped into electrolyte which adheres and then into a polymer which forms a carbon dioxide permeable and ion-impermeable membrane or barrier on the whole assembly when the polymer cures. The proximal ends of the silver tube and wire are connected by means of a coaxial cable to a high impedance voltmeter which is calibrated in terms of partial pressure of carbon dioxide in millimeters of mercury. Means are provided for standardizing the sensor and keeping it equilibrated during storage.

3,824,158

COMPOSITION OF BATHS FOR ELECTRODEPOSITION OF BRIGHT ZINC

William E. Rosenberg, Parma, Ohio, assignor to R. O. Hull & Company, Inc., Cleveland, Ohio

No Drawing. Filed Jan. 26, 1973, Ser. No. 327,016

Int. Cl. C23b *5/10, 5/46*

U.S. Cl. 204—55 R **6 Claims**

It has been found that the addition of the epihalohydrin quaternary salt of aminated polyepichlorohydrin to aqueous, alkaline electroplating baths containing zinc ions, provides smooth, bright deposits of zinc.

3,824,159

METHOD OF ANODICALLY COATING ALUMINUM

Felix Wehrmann, Vienna, Austria, assignor to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Wiener, Neudorf, Austria

No Drawing. Filed May 10, 1972, Ser. No. 251,917

Claims priority, application Austria, May 18, 1971, A 4,295/71

Int. Cl. C23b *9/02*

U.S. Cl. 204—58 **30 Claims**

Describes a method of coating objects made entirely or partly of aluminum or an aluminum alloy, in which the part to be coated is anodically oxidized in an electrolyte bath containing at least one alkaline silicate soluble in the electrolyte bath and at least one organic complex-forming substance, by the application of direct current, alternating current or pulsating current.

3,824,160

MANUFACTURE OF COPPER DICHROMATE AND RELATED MATERIALS

Winslow H. Hartford, Charlotte, N.C., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 26, 1972, Ser. No. 257,294

Int. Cl. B01k *1/00*; C01g *3/00, 37/14*

U.S. Cl. 204—89 **10 Claims**

An electrolytic method of manufacturing copper dichromate employing a copper anode and an inert cathode in an aqueous chromic acid electrolyte. The method lends itself to the use of scrap copper and spent chromic acid liquors, such as waste chromium plating liquors, as raw materials. By adjusting the pH of the solution obtained, unwanted impurities such as iron and trivalent chromium can readily be separated, thus providing a solution particularly suited to the economical production of wood preserving concentrates.

3,824,161

METHOD OF SEPARATING METALLIC CHLORIDES FROM AN AQUEOUS MIXTURE THEREOF

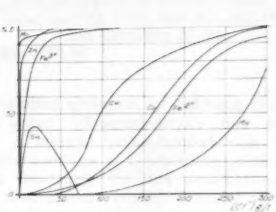
Alexander I. Aue, Gullspang, Hans Reinhardt and Jan Helge Arnold Rydberg, Vastra Frolunda, and Lars Skjutare, Gullspang, Sweden, assignors to Gullspangs Elektrokemiska AB, Gullspang, Sweden

Filed Oct. 8, 1971, Ser. No. 187,845

Claims priority, application Sweden, Oct. 8, 1970, 13,640/70

Int. Cl. B01d *11/00*; C01g *49/10, 51/08*

U.S. Cl. 423—139 **6 Claims**



A method for separating one or more metallic chlorides from an acid aqueous mixture thereof, by a multi-stage, selective extraction process with a water immiscible extraction agent consisting of a solution of an amine capable of forming extractable compounds with the metallic chlorides, and subsequently washing out the metallic chloride or chlorides.

3,824,162

METHOD FOR ELECTROREFINING CRUDE COPPER HAVING HIGH ANTIMONY CONTENTS

Kenichi Sakai and Morimasa Sumida, Takehara, Japan, assignors to Mitsui Mining & Smelting Co., Ltd.

No Drawing. Filed Oct. 24, 1972, Ser. No. 299,744

Claims priority, application Japan, Oct. 29, 1971, 46/85,534

Int. Cl. C22d *1/16*

U.S. Cl. 204—108 **6 Claims**

A method for electrorefining crude copper including antimony in a high concentration comprising subjecting the crude copper to electrolysis as the anode in an electrolyte containing sulfuric acid and copper ion to thus deposit refined copper on the thin copper cathode, wherein the anode and the cathode are connected to a direct-current power unit provided with a polarity converting device and direct-current is fed to both electrodes of said cathode and said anode while periodically reversing the di-

rection of the current flow between both electrodes at selected times, with the proviso that the period of time during which positive polarity is applied to the anode in each cycle of the total impression cycles necessary to complete refinement of the crude copper is controlled in the range of not greater than 200 seconds and that the ratio of the durations for impression of both polarities is regulated so as to satisfy the following equation:

the period of time for impression of negative polarity to the anode (seconds)/period of time for impression of positive polarity to the anode (seconds)=not less than 0.025.

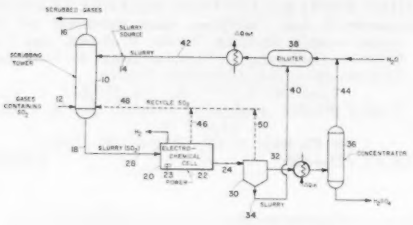
The crude copper includes from 0.1 to 3.0 wt. percent of antimony and at least 0.1 wt. percent of arsenic.

3,824,163

ELECTROCHEMICAL SULFUR DIOXIDE ABATEMENT PROCESS

Henri J. R. Maget, Los Altos, Calif., assignor to Electronic Associates, Inc., Long Branch, N.J.

Filed July 19, 1972, Ser. No. 273,213
Int. Cl. C01d *7/34*
U.S. Cl. 204—130 **5 Claims**



A process is provided for removing pollutant(s) from waste gases and electrochemically converting such pollutant(s) into desired form, wherein a waste gas stream containing pollutant(s) is scrubbed with a slurry of pollutant-adsorbent particles suspended in slightly acidic aqueous solution, thereby causing pollutant(s) to be adsorbed by the particles. The slurry of said particles is then electrochemically treated employing said slurry as a dispersed electrode, to convert the pollutant(s) into desired material, such as a useful product or into a less-toxic or less-noxious material. This process is particularly applicable to the removal of sulfur dioxide from waste gases by scrubbing such gases with an aqueous slurry of particulate carbon causing sulfur dioxide to be adsorbed by the carbon particles and electrochemical converting the sulfur dioxide to sulfuric acid, employing the slurry of carbon particles having sulfur dioxide adsorbed thereon as a dispersed electrode.

Apparatus for carrying out the above process is also provided.

3,824,164

PHOTOCURABLE PRINTING INKS DERIVED FROM 1-AZA - 5 - HYDROXYMETHYL-3,7-DIOXABICYCLO [3.3.0] OCTANE

Richard J. Himics, Lake Hiawatha, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 44,534, June 8, 1970, now Patent No. 3,759,942, dated Sept. 18, 1973. This application Nov. 29, 1972, Ser. No. 310,428
Int. Cl. C08d *1/00*; C08f *1/00*
U.S. Cl. 204—159.23 **12 Claims**

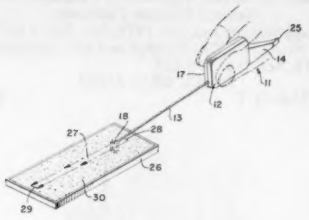
Printing inks and coating compositions comprising derivatives of 1 - aza - 5 - hydroxymethyl-3,7-dioxabicyclo [3.3.0] octane are photopolymerizable.

3,824,165

GEL TROUGH REMOVING DEVICE

Eduardo V. Miranda and Lamont J. Seitz, Huntington Beach, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Oct. 3, 1973, Ser. No. 402,950
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 G **6 Claims**



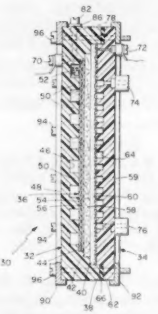
Gel troughs in electrophoretic gel media are removed with an implement comprising a finger grippable handle, an elongated flexible narrow gauge wire extending outwardly from one end and a reduced blade portion at the other end, said wire terminating in a short U-shaped, downwardly disposed bend transverse to the axis of said wire, said bend having an inner width between its vertical legs slightly less than the width of said trough and the height of the vertical legs of said bend being greater than the depth of said trough.

3,824,166

TRACE GAS ANALYZER

Max C. Diebert, Needham Heights, Mass., assignor to Anacone, Inc., Ashland, Mass.

Filed Dec. 30, 1971, Ser. No. 214,240
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 R **13 Claims**



A trace gas analyzer for detecting and measuring amounts in the range of from 0 to 1000 p.p.m. of a trace gas in a gaseous stream. The detection cell has a first electrically conductive, non-consumable gas diffusion electrode of microporous, hydrophobic material dividing the interior of the cell into two chambers, a gas chamber on one side closed to ambient atmosphere and having a gas inlet and a gas outlet for the gas to be analyzed and an electrolyte chamber on the other side, having a second electrode, and a liquid electrolyte in the electrolyte chamber contacting both electrodes, including a substantial volume of unadsorbed free electrolyte confined in the electrolyte chamber by the microporous hydrophobic electrode. A reservoir communicating through the second electrode to the space between the electrodes is featured.

3,824,167

GAS DETECTING AND MEASURING DEVICE

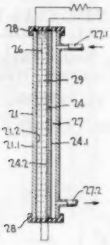
Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, N.Y., assignors to Energetics Science, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 88,267, Nov. 10, 1970, now Patent No. 3,776,832. This application Aug. 17, 1971, Ser. No. 172,486

The portion of the term of the patent subsequent to Dec. 4, 1990, has been disclaimed and dedicated to the Public

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 R **16 Claims**



A device for the detection of and quantitative measurement of a gas in a given environment, such as alcohol in the breath or carbon monoxide in the atmosphere, is described. The device comprises intake and flow control means for the gas sample, and an electrochemical cell having an anode which provides a site for electrochemical reaction of the gas being detected, a cathode, a reference electrode, and an electrolyte in contact with the anode, cathode, and reference electrode. The anode, to ensure that the current production is a result of the gas being detected and not other gases, including oxygen, is maintained at a fixed potential in relation to the potential of the reference electrode. The device provides an accurate and inexpensive means of detecting and quantitatively measuring a gas contained in a given environment, i.e., alcohol in the breath of the subject being tested or carbon monoxide in the atmosphere.

3,824,168

GAS DETECTING AND QUANTITATIVE MEASURING DEVICE

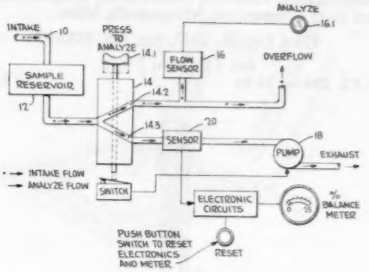
Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, N.Y., assignors to Energetics Science, Inc., New York, N.Y.

Continuation-in-part of applications Ser. No. 88,267, Nov. 10, 1970, and Ser. No. 172,486, Aug. 17, 1971. This application June 16, 1972, Ser. No. 263,531

Int. Cl. G01n *27/46;* **A61b** *5/00*

U.S. Cl. 204—195 R **3 Claims**

An improved device for the detection of, and quantitative measurement of a gas in a given environment, such as alcohol in the breath, is described. The device comprises intake means, reservoir means, and flow control means for a gas sample; an electrochemical cell having a low resistance anode, a cathode, a reference electrode, and an electrolyte in contact with the anode, cathode, and reference electrode which electrochemically measures the gas being detected; valve means for splitting the gas flow from the gas reservoir into fractions, and pump means for drawing the gas sample from the intake means through the reservoir, through the valve means, and to the electrochemical cell. The anode, to ensure that the current production is a result of the gas being detected and not other gases including oxygen, is maintained at a fixed potential in relation to the potential of the reference electrode. The device provides an accurate, rapid and inexpensive means of detecting and quantitatively measuring a gas contained in



a given environment, i.e., alcohol in the breath of the subject being tested or carbon monoxide in the atmosphere, utilizing small gas samples thereby permitting the use of compact, portable units.

3,824,169

ION SELECTIVE ELECTRODE COMPRISING GOLD

Gerardus Wouter Serge van Osch, Utrecht, Jan Van Houwelingen, Leersum, and Anton Maarten Herman Weelink, Lichtenvoorde, Netherlands, assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 15, 1973, Ser. No. 323,696

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 M **23 Claims**

An electrode assembly for detecting ions in solution having an ion-sensitive imporous membrane consisting of a compressed pellet comprising a mixture of finely divided gold as the conductive matrix material distributed through a salt containing ions to which the assembly is sensitive, such as silver chloride when chloride ions are detected, is disclosed. In the ion-sensitive electrode assembly the membrane is exposed at one surface to the solution in which the electrode is immersed and the selected ion content thereof is to be measured, the other surface being in contact with an occluded electrolyte in which a contact wire is immersed to provide a fixed contact potential. The ion-sensitive electrode and a standard reference electrode are both contacted with the solution of ions to be measured and are connected to a potential measuring device such as a voltmeter.

3,824,170

ION SELECTIVE ELECTRODE COMPRISING CUPROUS SULFIDE AND METHOD OF MAKING SAID ELECTRODE

Anton Maarten Herman Weelink, Lichtenvoorde, Gerardus Wouter Serge van Osch, Utrecht, and Jan Van Houwelingen, Leersum, Netherlands, assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 15, 1973, Ser. No. 323,697

Int. Cl. G01n *27/30*

U.S. Cl. 204—195 M **24 Claims**

An electrode assembly for detecting ions in solution having an ion-sensitive imporous membrane consisting of a compressed pellet comprising a mixture of cuprous sulfide as the conductive matrix material distributed through a salt containing ions to which the assembly is sensitive, such as silver chloride when chloride ions are detected, is disclosed. In the ion-sensitive electrode assembly the membrane is exposed at one surface to the solution in which the electrode is immersed and the selected ion content thereof is to be measured, the other surface being in contact with an occluded electrolyte in which a contact wire is immersed to provide a fixed contact potential. The ion-sensitive electrode and a standard reference electrode are both contacted with the solution of ions to be measured and are connected to a potential measuring device such as a voltmeter.

3,824,171

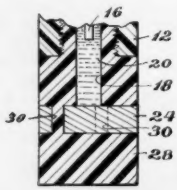
NOVEL ELECTROCHEMICAL ELECTRODE ASSEMBLY

Jan van Houwelingen, Leersum, Gerardus Wouter Serge van Osch, Utrecht, and Anton Maarten Herman Weelink, Lichtenvoorde, Netherlands, assignors to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 15 ,1973, Ser. No. 323,698

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 M **18 Claims**



An ion-sensitive electrode assembly is disclosed having a tubular body of an insulating material, a cavity within the body containing a reference electrolyte, an electrically conductive reference electrode partially contained in the cavity and in electrochemical communication with the electrolyte and a compressed, substantially impervious pellet of an ion-sensitive material embedded in the body to a solution of ions to be measured and another surface in contact with the electrolyte.

Preferred is a pellet arrangement containing several holes in the pellet securing the pellet on one end to the body and providing a protective, dielectric barrier on the other. The electrode provides for improved contact with the solutions of ions to be measured, is easy to clean and is well adapted to withstand mechanical shock.

3,824,172

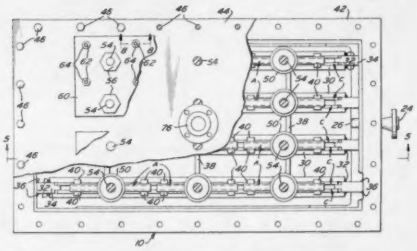
ELECTROLYTIC CELL FOR ALKALI METAL CHLORATES

Jimmie Ray Hodges, Benton, Ky., assignor to Penn-Olin Chemical Company, Wilmington, Del.

Filed July 18, 1972, Ser. No. 272,830

Int. Cl. B01k *3/00*

U.S. Cl. 204—269 **10 Claims**



Electrolytic cell includes pairs of flat perforate cathodes assembled in fixed spaced apart disposition outside the cell to define modules of open-ended boxlike configuration which are then welded to the cell tank walls. A coated metal anode is received between each cathode pair, chemically resistant insulative guides and spacers providing slidable interelectrode contact to assure exact gap symmetry for the headboard suspended anodes. Electrode power buses of thin section and extended surface intimately contact the headboard and tank surfaces. Flooded cell operation effects cooling of the buses.

3,824,173

DISMANTLEABLE BIPOLAR ELECTRODES INCLUDING ELECTRICAL CONTACT MEANS BETWEEN THE ELECTRODE PORTIONS

Pierre Bouy, 36 Bld Sadi Carnot, Enghien-les-Bains, France, and Guillaume Malzac, Residence Le San Marco, Quai Alsace Lorraine T5, Martigues, France

Filed Dec. 13, 1972, Ser. No. 314,783

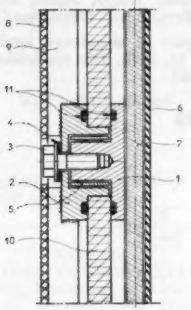
Claims priority, application France, Dec. 22, 1971, 7146072

Int. Cl. B01k *3/04*

U.S. Cl. 204—284 **14 Claims**

Dismantleable bipolar electrodes are provided of which the anodically active portion comprises titanium or other film-forming metal or alloy of similar anodic properties covered with a conducting layer, and of which the cathodically active portion comprises a common metal such as mild steel. Said electrodes are characterized by the separation in space of said active portions, at least one of which is apertured or foraminous, and by the electrical connection between said portions, which is achieved by

means of two series of parts, each of said series being mechanically and electrically secured to one of said portions, the corresponding parts of each series being of shapes such that once connected in order to form pairs of parts, said pairs have a sealed cavity for housing a device or means for establishing electrical contact between the two parts of each pair.



These electrodes are particularly suited for being mounted in cells of the filter-press type, for the electrolysis of brines.

3,824,174
BIPOLAR ELECTRODE
Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed May 25, 1973, Ser. No. 364,197
Int. Cl. B01k *1/00, 3/06;* **C01b** *11/26*
U.S. Cl. 204—290 F **7 Claims**

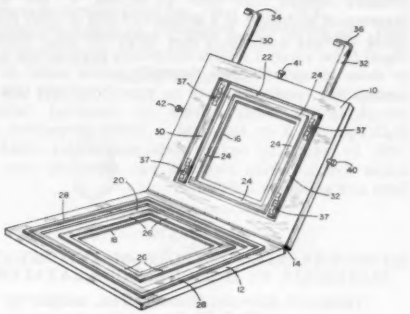
An improved dimensionally stable bipolar electrode for use in electrochemical applications comprising a central valve metal layer, suitable anodic material on the anode side of the valve metal and a barrier layer of a metal silicide on the cathode side of the valve metal layer. Such electrodes function at low hydrogen permeability rates during use in electrolytic processes.

3,824,175
BIPOLAR ELECTRODE
Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed May 25, 1973, Ser. No. 364,199
Int. Cl. B01k *1/00, 3/06;* **C01b** *11/26*
U.S. Cl. 204—290 F **10 Claims**

An improved dimensionally-stable bipolar electrode for use in electrochemical processes comprising a valve metal layer, suitable anodic material on the anode side of the valve metal, a barrier layer of carbon on the cathode side of the valve metal protected by a layer of common metal cathodic material. Such electrodes function at low hydrogen permeability rates during use in electrolytic processes.

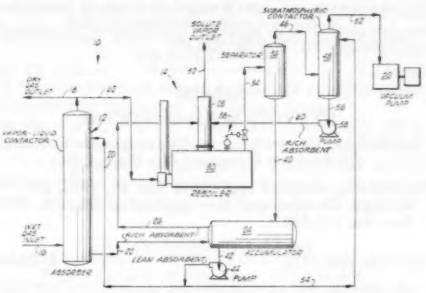
3,824,176
MATRIX HOLDER
Patrick B. Crowe, Eden Prairie, Minn., assignor to Buckbee-Mears Company, St. Paul, Minn.
Filed Aug. 28, 1972, Ser. No. 284,333
Int. Cl. B01k *3/00*
U.S. Cl. 204—297 R **7 Claims**

A hinged frame for holding a matrix base for electroforming in an electroplating bath, which frame includes suitable rubber gasket material to define and isolate the central area of the electroforming matrix for plating. The



frame includes one or more spring loaded electrical connectors for conducting current to the edges of the electroforming matrix.

3,824,177
METHOD AND SYSTEM FOR RECONCENTRATING SOLUTE-RICH LIQUID ABSORBENT
Joseph D. Honerkamp and Paul M. Tournoux, Oklahoma City, Okla., assignors to Black, Sivalls & Bryson, Inc., Houston, Tex.
Filed Mar. 26, 1973, Ser. No. 344,768
Int. Cl. B01d *1/00, 3/00, 3/34, 45/00, 47/00, 53/02*
U.S. Cl. 203—18 **13 Claims**



The present invention relates to an improved method and system for reconcentrating solute-rich liquid absorbent wherein the liquid absorbent is heated at super-atmospheric pressure to vaporize a portion of the solute contained therein and the resultant partially reconcentrated liquid absorbent is subjected to sub-atmospheric pressure so that additional solute contained therein is vaporized and the liquid absorbent is further reconcentrated.

3,824,178
HYDROCRACKING PETROLEUM AND RELATED MATERIALS
Milton M. Wald, Houston, Tex., assignor to Shell Oil Company
No Drawing. Filed Apr. 27, 1973, Ser. No. 354,967
Int. Cl. C10g *13/08;* **B01j** *11/78*
U.S. Cl. 208—108 **5 Claims**

Higher molecular weight hydrocarbonaceous materials containing polynuclear substances, such as heavy petroleum

crudes and higher boiling petroleum fractions, including residual fractions, shale oil, tar sand oil, oil and tar from coal and coal itself are hydrocracked at an elevated temperature ranging from 250° C. to 500° C. and in the presence of hydrogen at a pressure of 200 to 3000 p.s.i.g., while intimately mixed with a homogeneous continuous liquid phase catalyst system comprising predominately one or more phosphoric acids thermally stable under the hydrocracking conditions, such as, pyrophosphoric acid and polyphosphoric acids having an empirical ratio of $H_2O:P_2O_5$ of 3 or less, and a minor proportion, e.g., 10% by weight of certain metal polyhalides which are active hydrocracking catalysts, e.g., especially zinc, gallium and antimony halides.

3,824,179

HYDROCRACKING PETROLEUM AND RELATED MATERIALS BY HOMOGENEOUS CATALYSIS

Thomas E. Kiovsky, Houston, Tex., assignor to Shell Oil Company

No Drawing. Filed Apr. 27, 1973, Ser. No. 354,966

Int. Cl. C10g *13/08*; B01j *11/78*

U.S. Cl. 208—108 **5 Claims**

Higher molecular weight hydrocarbonaceous materials containing polynuclear substances, such as heavy petroleum crudes and higher boiling petroleum fractions, including residual fractions, shale oil, tar sand oil, oil and tar from coal and coal itself are hydrocracked at an elevated temperature ranging from 200° C. to 500° C. and in the presence of hydrogen at a pressure of 200 to 3000 p.s.i.g., while intimately mixed with a homogeneous continuous liquid phase catalyst system comprising predominately one or more phosphoric acids thermally stable under the hydrocracking conditions, such as pyrophosphoric acid and polyphosphoric acids having an empirical ratio of $H_2O:P_2O_5$ of 3 or less, and a minor proportion, e.g., less than 20% by weight of certain iodine compounds, e.g., specially HI, NaI or NH_4I.

3,824,180

HYDROCRACKING PROCESS

Lee Hilfman, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Original application Jan. 27, 1972, Ser. No. 221,450. Divided and this application Mar. 1, 1973, Ser. No. 337,220

Int. Cl. C10g *13/06, 31/14*

U.S. Cl. 208—111 **8 Claims**

A process for hydrocracking a hydrocarbonaceous charge stock with a catalytic composite of an alumina-containing carrier material, a nickel component and a Group V–B metallic component. The catalyst is prepared via coextrusion which inhibits the formation of nickel aluminate to the extent that less than about 0.1% thereof appears in the final catalytic composite.

3,824,181

THERMALLY STABLE JET FUEL

Harry C. Stauffer, Cheswick, and Robert A. Titmus, Pittsburgh, Pa., and James R. Murphy, Houston, Tex., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Aug. 6, 1973, Ser. No. 385,827

Int. Cl. C10g *23/02*

U.S. Cl. 208—143 **5 Claims**

Thermally stable jet fuel is produced by contacting a jet fuel feed with a catalyst composition comprising from 15 to 25 weight percent of a Group VI metal and from 15 to 25 weight percent of a Group VIII metal composited with a halogen enriched alumina support under hydrogenation conditions.

3,824,182

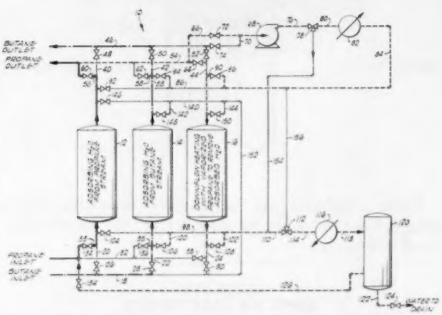
PROCESS FOR SIMULTANEOUSLY REMOVING ADSORBABLE COMPONENTS FROM TWO LIQUID STREAMS

Adrian J. Peterson, Tokyo, Japan, assignor to Black Sivalls & Bryson, Inc., Oklahoma City, Okla.

Continuation-in-part of abandoned application Ser. No. 243,351, Apr. 12, 1972. This application Oct. 30, 1972, Ser. No. 301,881

Int. Cl. C10g *33/04*

U.S. Cl. 208—188 **15 Claims**



The present invention relates to an improved process for simultaneously removing desired adsorbable components from two liquid streams. The first of the liquid stream is contacted with a bed of solid adsorbent material so that desired adsorbable components contained therein are adsorbed on the bed. When the bed is partially loaded with such components, the second liquid stream is flowed into contact with another bed of solid adsorbent material so that desired adsorbable components contained therein are adsorbed on the second bed. A third bed of solid adsorbent material is regenerated during the period of time required for the partially loaded bed contacting the first liquid stream to become fully loaded with adsorbed components. The flow pattern of the first liquid stream is changed when the bed in contact therewith becomes loaded so that the first stream flows into contact with the bed just regenerated. Thereafter, the flow patterns of the first and second liquid streams are periodically changed so that the liquid stream contacting the bed just becoming loaded with adsorbed components is flowed into contact with the bed just regenerated and the bed becoming loaded with adsorbed components is regenerated.

3,824,183

ACID NUMBER REDUCTION OF HYDROCARBON FRACTIONS USING A SOLID CATALYST AND NH_3

Sun W. Chun, Murrysville, and Angelo A. Montagna, Monroeville, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

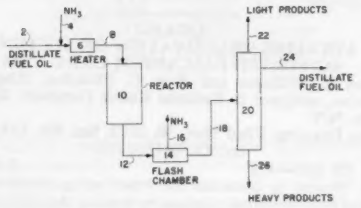
Filed July 5, 1973, Ser. No. 376,526

Int. Cl. C10g *17/00, 29/00*

U.S. Cl. 208—263 **17 Claims**

The acid number of a hydrocarbon fraction is reduced

by contacting the hydrocarbon fraction and a nitrogen containing compound such as ammonia with a solid cat-

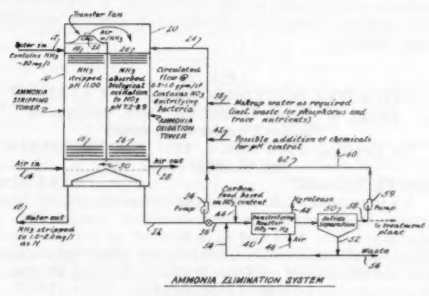


alyst having a surface area greater than 15 m.²/g., such as titanium oxide on alumina.

3,824,184
SLIME CONTROL IN INDUSTRIAL WATERS
Herbert J. Hatcher, Bloomington, Robert J. Truda, St. Paul, Thomas G. Lechner, Lake Elmo, and Charles R. McDuff, St. Paul, Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.
No Drawing. Filed Sept. 4, 1970, Ser. No. 69,933
Int. Cl. C02b *1/18*
U.S. Cl. 210—1 **4 Claims**

Slime formation is controlled (e.g. retarded or removed) by the intentional addition to industrial waters (e.g. white water in pulp and paper mills) of slime controlling amounts of the enzyme levan hydrolase.

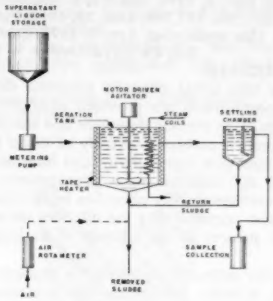
3,824,185
AMMONIA ELIMINATION SYSTEM
David H. Caldwell, Lafayette, Calif., and Edwin F. Barth, Cincinnati, Ohio, assignors to the United States of America as represented by the Administrator of the Environmental Protection Agency
Filed Sept. 5, 1972, Ser. No. 286,353
Int. Cl. C02c *1/02*
U.S. Cl. 210—3 **10 Claims**



AMMONIA ELIMINATION SYSTEM

The nitrogen content of waste water is removed by air stripping ammonia from waste water. The ammonia is then absorbed in water containing nitrifying microorganisms, so that the ammonia is oxidized in the absorber water. The absorber and nitrifier water becomes far more concentrated in nitrogen than the original waste water and can be denitrified by denitrifying microorganisms in a small reactor. Air and water can be recycled in the system.

3,824,186
BIOTREATMENT PROCESS
Allen H. Erickson, Wausau, Edmunds M. Pogainis, Mosinee, and Gerald H. Teletzke, Wausau, Wis., assignors to Sterling Drug Inc., New York, N.Y.
Continuation-in-part of abandoned application Ser. No. 48,070, June 22, 1970. This application Jan. 24, 1972, Ser. No. 219,948
Int. Cl. C02c *1/06*
U.S. Cl. 210—7 **5 Claims**



The liquors obtained by dewatering thermally conditioned organic sludge are subjected to separate biotreatment in undiluted form, thereby removing more than 90% of the biological oxygen demand from the liquors. The biotreatment is carried out in an aeration vessel containing biological sludge.

3,824,187
TRI-n-AMYL LEAD SALT OF SATURATED ALIPHATIC MONOCARBOXYLIC ACID
Richard D. Gorsich, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Jan. 24, 1962, Ser. No. 168,508
Int. Cl. C01f *7/00*
U.S. Cl. 252—1 **7 Claims**

1. A tri-n-amyllead salt of a saturated aliphatic monocarboxylic acid containing 1–20 carbon atoms.

6. As a composition of matter, a tri-n-amyllead salt of a saturated aliphatic monocarboxylic acid containing 1 to 20 carbon atoms dissolved in a hydrocarbon solvent containing from about 4 to about 8 carbon atoms and containing only carbon and hydrogen atoms in the molecule.

3,824,188
HALOGEN-SUBSTITUTED AZINE COMPOUNDS AS PEROXYGEN BLEACH ACTIVATORS
Frank Fred Loffelman, Somerville, and Thomas Eugene Brady, Piscataway, N.J., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Mar. 21, 1973, Ser. No. 343,312
Int. Cl. C11d *7/54*
U.S. Cl. 252—95 **10 Claims**

Halogen-substituted azine compounds selected from pyrimidine, pyrazine, quinoxaline and pyridine compounds, carrying as ring substituents at least one halogen selected from chlorine, bromine or fluorine and at least one substituent selected from halogen, cyano, nitro, lower alkyl and lower alkoxy groups, are effective as bleach activators for peroxygen bleaching compositions.

3,824,189
DETERGENT COMPOSITIONS AND METHODS FOR MAKING SAME
Giuseppe Borello, 9 Via Fanciulla, Anzio, Italy
No Drawing. Filed May 11, 1972, Ser. No. 252,274
Int. Cl. C11d *7/56*
U.S. Cl. 252—99 **5 Claims**

The present invention relates to new detergent compositions and methods for preparing such compositions and

more particularly to new detergent compositions in extruded form and methods for producing same.

3,824,190
PHENOLIC SYNTHETIC DETERGENT-DISINFECTANT

Murray W. Winicov, Flushing, and William Schmidt, Sea Cliff, N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 205,346, Dec. 6, 1971, which is a continuation of application Ser. No. 887,748, Dec. 23, 1969, both now abandoned. This application Apr. 5, 1973, Ser. No. 348,112
Int. Cl. C11d *3/48*
U.S. Cl. 252—106 **17 Claims**

Unique and novel phenolic synthetic detergent-disinfectant compositions are provided wherein the detergent component is an anionic detergent and the phenolic components thereof consist essentially of ortho phenylphenol in admixture with high activity and intermediate activity phenolics; the ratio of ortho phenylphenol to the high and intermediate activity phenolics being from about 4:1–1.1:1. When prepared as a use dilution, the ortho phenylphenol is present in an amount of at least about 450 p.p.m.

When the ortho phenylphenol is employed only with the high activity phenolics, the preferred minimum amount of ortho phenylphenol should be at least about 600 p.p.m. and the ratio of the ortho phenylphenol to the high activity phenolics can then be from about 2.5:1–1.5:1 and, when used with intermediate activity phenolics at the same preferred minimum level, the ratio of the ortho phenylphenol to the intermediate activity phenolics can be from about 2.1:1–1.25:1.

The novel phenolic synthetic detergent-disinfectant compositions of the invention are effective not only against Staphylococcus and Salmonella but also against the troublesome Pseudomonas species in hard water.

3,824,191
PROCESS OF PREPARING SILICATES OF HIGH POROSITY AND SILICATES OBTAINED BY SAID PROCESS

Raymond Wey, Mulhouse Dornach, Pierre Guisen, Mulhouse, and Ronan Le Dred, Riedisheim, France, assignors to Compagnie Francaise de Raffinage, Paris, France

No Drawing. Filed Jan. 19, 1972, Ser. No. 219,142
Claims priority, application France, Jan. 20, 1971, 7101794
Int. Cl. C04b *31/22, 31/26*
U.S. Cl. 252—378 R **10 Claims**

Novel processes, compositions (of the type of the resulting product), and uses therefor; concerning formation of exfoliated vermiculite from commercial vermiculite by successive treatments with a saline solution, with water, and with an acid followed by washing with water until neutral, resulting in an expanded product having a greatly increased specific surface, pore volume, and average pore radius (the values of which can be substantially controlled to give a desired taylor-made product by variation of the time, heat, concentration, pressure and like parameters), the usefulness of said products including that of a desiccant.

3,824,192
STABILIZED SYSTEM CONTAINING METAL HYDROXYALKYL PHOSPHONIC ACID OR PHOSPHINIC ACID

Anthony Dominic DiBattista, 19 Douglas Place, Eastchester, N.Y. 10707, and John Denon Spivack, 1 Blue Jay St., Spring Valley, N.Y. 10977

No Drawing. Continuation of abandoned application Ser. No. 854,281, Aug. 29, 1969. This application Dec. 21, 1971, Ser. No. 210,584
Int. Cl. C08k *1/58, 1/60*
U.S. Cl. 252—400 A **15 Claims**

Organic materials normally subject to oxidative deterioration are stabilized by incorporating therein a metal derivative of monobasic or dibasic hindered phenol substituted phosphonic acid and one or more of the additional additives selected from phenolic antioxidants, synergists, ultraviolet light absorbers, ultraviolet light stabilizers, buffers, pigments, or delustering agents, dyes, dyesites and phosphites.

3,824,193
ALKALINE REACTIVATION OF ALUMINA SUPPORTED PALLADIUM CATALYSTS

James E. Williams and Jean C. Fleischer, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 30, 1972, Ser. No. 239,783
Int. Cl. B01j *11/18*
U.S. Cl. 252—412 **5 Claims**

A process is disclosed for reactivating alumina supported hydrogenation catalysts by treating the catalyst with either an alkali metal hydroxide or alkaline earth metal hydroxide in dilute aqueous solution to thoroughly wet the catalyst, then heating the treated catalyst to a temperature of between about 100° C. and about 500° C., and allowing the catalyst to cool.

3,824,194
CATALYST FOR USE IN CONVERSION OF GASES AND METHOD FOR PREPARING THEREOF

Yutaka Ushimaru, Hachioji, Koichi Matsuo, Mitaka, and Yukihiro Tochio, Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1972, Ser. No. 277,344
Claims priority, application Japan, Aug. 5, 1971, 46/59,165
Int. Cl. B01j *11/06, 11/32*
U.S. Cl. 252—458 **8 Claims**

A molded catalyst obtained through a process comprising the steps of mixing manganese oxide(s) or a mixture of manganese oxide(s) and metal oxide(s), such as bismuth oxide(s), copper oxide(s), iron oxide(s), zinc oxide, lead oxide(s), alumina, silica and magnesia, with at least one metal powder selected from a group consisting of copper, iron and zinc powder; forming the chromate film onto the surface of said metal powder by dipping the thus prepared mixture in an aqueous solution containing chromic acid; molding the thus treated mixture into a suitable shape; and then subjecting the thus molded product to heat treatment in order to dehydrate said chromate film, is effective in conversion of carbon monoxide, hydrocarbons and nitrogen oxides, particularly in conversion of said gaseous components contained in exhaust emissions from vehicles.

3,824,195
OXIDATIVE DEHYDROGENATION CATALYST

Emory W. Pitzer, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,614
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **18 Claims**

An improved oxidative dehydrogenation catalyst comprising a lithium-tin-phosphorus-oxygen composition is disclosed. Also disclosed is a method of reactivating a composition of a similar nature. The improved catalyst and the reactivated catalyst, both, are formed by procedures involving phosphorus deposition.

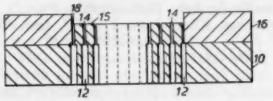
3,824,196
CATALYST SUPPORT

John Jones Benbow and Leslie Waddington Lord, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 1, 1972, Ser. No. 248,887
Claims priority, application Great Britain, May 7, 1971, 13,721/71
Int. Cl. B01j *11/06*
U.S. Cl. 252—455 R **9 Claims**

A catalyst support in the form of a multi-tubular refractory module is made by forming a plastic composition

containing the material of the support or a compound thermally decomposable or retractable thereto, a liquid



and a viscosity-controlling substance, forcing the said composition successively through a zone comprising a plurality of discrete primary channels within a solid block and then a unifying zone comprising secondary channels within the same block, the secondary channels being interlinked in the configuration of continuous curves transverse to the direction of flow of the plastic composition, drying the module thus produced and calcining it to cause the formation of ceramic bonds.

3,824,197

PROCESS FOR PREPARING POLY-CATIONICALLY ACTIVE POLYMERS FROM PREFORMED POLYMERS

Samuel Smith, Roseville, and Allen J. Hubin, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Application Feb. 10, 1966, Ser. No. 527,399, which is a continuation-in-part of abandoned application Ser. No. 290,218, June 24, 1963. Divided and this application June 23, 1970, Ser. No. 51,448

Int. Cl. C08g *39/00*

U.S. Cl. 260—2 D **7 Claims**

Process for preparing poly-cationically active polymers by reacting a preformed polymer having hydroxyl, thiol, alkali metal alkoxide, alkali metal mercaptide, carboxylic acid or sulfonic acid terminal radicals with (a) a monobasic acid which is stronger than 100% sulfuric acid and which is capable of effecting the cationic polymerization of tetrahydrofuran without chain transfer, (b) an acyl halide thereof, (c) an anhydride thereof, or (d) an alkylene biester of the structure

$$DZCH_2(A)_nCH_2ZD$$

where Z is oxygen or sulfur, n is 0 or 1, A is a divalent organic radical which is devoid of acetylenic and olefinic unsaturation and of alkylatable groups containing Zerewitinoff hydrogen atoms and D is the residue remaining after deletion of —OH from the acid group of (a). If the preformed polymer has acyl bromide or acyl chloride terminal radicals, a protonic acid which is stronger than 100% sulfuric acid and which is capable of effecting the cationic polymerization of tetrahydrofuran without chain transfer, or a salt thereof, can be used as the coreactant. The products of the process are cationically active and "living" at each end of the polymer chain.

3,824,198

PROCESS FOR REACTING ACTIVE HYDROGEN CONTAINING COMPOUNDS WITH POLYCATIONICALLY ACTIVE POLYMERS

Samuel Smith, Roseville, and Allen J. Hubin, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Application Feb. 10, 1966, Ser. No. 527,399, which is a continuation-in-part of abandoned application Ser. No. 290,218, June 24, 1963. Divided and this application June 23, 1970, Ser. No. 59,772

Int. Cl. C08g *39/00*

U.S. Cl. 260—2 D **14 Claims**

A process for reacting active hydrogen containing compounds, such as ammonia, with polycationically active polymers, resulting in alkylation or acylation. An acid acceptor is preferably used to neutralize the acid by-product of the reaction. When ammonia is the active hydrogen compound, an amine or amide terminated polymer is the product of the reaction.

3,824,199

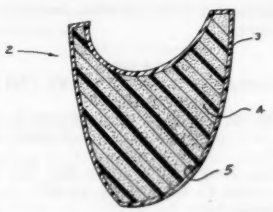
PROCESS FOR PREPARING SELF-SKINNED POLYURETHANE FOAM

Herbert G. Nadeau, North Haven, and Robert A. Stengard, Bethany, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of abandoned application Ser. No. 657,348, July 31, 1967. This application Feb. 10, 1971, Ser. No. 114,356

Int. Cl. B29d *27/00;* **C08g** *22/44*

U.S. Cl. 260—2.5 AZ **5 Claims**



Novel resilient cellular polyurethanes, characterized by integrally formed tough skins completely surrounding a cellular core, are disclosed. These self-skinned flexible foams are obtained using novel foam mixes so formulated that the cells proximating the surface of the advancing foam collapse on contact with alien surfaces such as mold walls. Such foam mixes require the use of conventional polyisocyanates and polyols, the absence of added water, the use of halogenated aliphatic hydrocarbon blowing agents and, in place of conventional surfactant requirements, the use of no surfactant or the use of a peripheral foam destabilisation agent which is either (a) a conventional antifoaming agent employed in excess of proportions normally recommended or (b) a conventional polyurethane foam surfactant employed in lower proportions than normally recommended. The novel resilient foams are useful in all energy-absorbing applications e.g. safety padding in automobiles, trucks, aircraft etc. as well as in upholstery, packaging, and like industries.

3,824,200

FLAMEPROOF AND FIREPROOF RESINOUS FOAMS

Ralph Matalon, 432 Cherry Hill Blvd., Camden, N.J. 08034

No Drawing. Filed Oct. 6, 1971, Ser. No. 187,179

Int. Cl. C08g *51/76, 51/78, 53/08*

U.S. Cl. 260—2.5 R **13 Claims**

Flameproof and fireproof resinous foams are produced by reacting together the following admixed components: (1) the liquid polymeric products of a heated blend of a reducing sugar, phosphoric acid, one or more fluidifiers and, preferably, a polyhydric phenol having at least two hydroxy groups in a meta position; (2) at least one foaming, gelling and hardening agent, such as an organic polyisocyanate and/or a powder of a polyvalent metal above cadmium in the electromotive series; and, preferably, (3) an additional hardener, such as formaldehyde, furfuryl alcohol, or blends or polymers of furfuryl alcohol and formaldehyde.

3,824,201
MATURATED POLYESTER POLYURETHANE COMPOSITIONS

Francis R. McGranaghan, Stow, and Henry Shanoski, Cuyahoga Falls, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 176,290, Aug. 30, 1971. This application Apr. 11, 1973, Ser. No. 350,107
Int. Cl. C08g *41/04, 22/42*
U.S. Cl. 260—18 TN 10 Claims

A moldable fiber-filled maturated thermosetting polyester resin-containing composition is achieved by reacting (A) a hydroxy-terminated, polyester resin having a hydroxyl functionality of between 3.0 and 1.8 in a standard molding formulation with (B) a polyisocyanate in an amount of at least about 85% but not more than 99% of the quantity necessary to cause the resin to reach its gel point and in contact with (C) a suitable catalyst for the reaction of isocyanate and hydroxyl groups, (D) an aliphatically-unsaturated monomer and a free radical polymerization catalyst.

3,824,202
HIGH TEMPERATURE POLYVINYL CHLORIDE COMPOSITIONS

Edward L. White, Freehold, and Edward J. Augustyn, Yardville, N.J., assignors to NL Industries, Inc., New York, N.Y.

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,630
Int. Cl. C08f *45/04, 45/38*
U.S. Cl. 260—23 XA 9 Claims

A combination of components useful as additives in polyvinyl chloride resin compositions for producing thermoplastic compounds having superior resistance to chemical and physical degradation at high temperatures comprises a stabilizer, including one or more anti-oxidants, and an inert filler, the latter being selected from Group II-A metal sulfates. A flexible, heat resistant thermoplastic compound is prepared by adding the individual components separately, or optionally as a homogeneous mixture, hereinafter referred to as a stabilizer1filler additive, to a polyvinyl chloride resin of high molecular weight and a plasticizer of relatively low volatility.

3,824,203
POLYCHLOROPRENE FOR NON-PHASING SOLVENT CEMENTS

Richard M. Tabibian, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Sept. 2, 1970, Ser. No. 69,124
Int. Cl. C08c *11/72*; C08d *9/14*; C08f *21/04*
U.S. Cl. 260—23.7 H 4 Claims

Chloroprene polymers, useful in non-phasing solvent cements having good tack, are produced by polymerizing chloroprene, optionally with another copolymerizable monomer, in an aqueous alkaline emulsion in the presence of water-soluble salts of:

(a) About 0.5 to 1.5 percent of a rosin acid,
(b) About 1 to 2 percent of a C_{12} to C_{20} unsaturated fatty acid, and
(c) About 0.5 to 1.5 percent of a condensation product of formaldehyde with a naphthalene sulfonic acid,

all percentages being by weight based on the weight of chloroprene and any other copolymerizable monomer present, the percentage of (a) and (b) being based on the free acid and of (c) being based on the salt; the total percentage of (a) and (b) being at least 2, and the conversion of monomer to polymer being at least about 85 percent; and optionally having present during polymerization from 1 to 4 percent by weight of a methyl ester of a naturally occurring rosin acid based on the weight of chloroprene.

3,824,204
STABILIZATION OF VINYL RESIN FOAM SYSTEMS

Elwood E. Huntzinger, Springfield, and Nelson N. Schwartz, Broomall, Pa., assignors to Air Products and Chemicals, Inc., Philadelphia, Pa.

No Drawing. Filed June 2, 1971, Ser. No. 149,325
Int. Cl. C08f *45/28*
U.S. Cl. 260—29.1 R 1 Claim

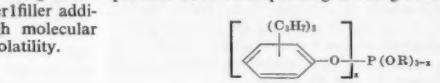
Vinyl resin foam products having desirable characteristics including fine uniform cellular structure and low density are prepared with extended processing latitude from a foamable precursor composition which includes as stabilizing agent an effective amount of a composition comprising the reaction product, having an intrinsic viscosity, $[\eta]$, in deciliters per gram, determined in cholroform at 30° C., of less than about 0.35, of the polymerization of the monomeric esters of methacrylic acid and alcohols having from 3 to 5 carbon atoms, effected in the presence of chain transfer agents.

3,824,205
METHOD FOR STABILIZING ELASTOMERS AND THE ELASTOMERS WHICH ARE PRODUCED ACCORDING TO THIS METHOD

Michel Démarcq, Lyon, and Raymond Petitjean, Hermes, France, assignors to Produits Chimiques Ugine Kuhlmann, Saint-Denis, France

No Drawing. Filed Mar. 7, 1972, Ser. No. 232,508
Claims priority, application France, Mar. 10, 1971, 7108209
Int. Cl. C07f *9/08*
U.S. Cl. 260—29.7 P 20 Claims

This invention relates to a method for stabilizing elastomers or mixtures based on elastomers which comprises adding thereto alone or in combination with one or more other nonphosphorous stabilizing agents, an effectively stabilizing amount of at least one hydrolysis stable phosphorous ester corresponding to the general formula



(I)

wherein the group C_3H_7 is an isopropyl radical, x is the integer 1, 2 or 3 and R is an aryl or alkaryl radical containing from 6 to about 30 carbon atoms or an aliphatic, cycloaliphatic or arylaliphatic radical containing from 2 to about 30 carbon atoms and from 0 to 2 chlorine atoms, 0 or 1 bromine atom and 0 to 6 oxygen atoms.

This invention also relates to elastomers and mixtures based on elastomers stabilized according to the above method.

3,824,206
RUBBER TREAD COMPOSITIONS

Krishna C. Baranwal, Stow, and Richard G. Bauman, Berea, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,908
Int. Cl. C08d *13/22*
U.S. Cl. 260—33.6 AQ 4 Claims

Rubber compositions which contain reinforcing pigments such as carbon black, and which are especially suitable for tire treads, are made in an unexpectedly high quality and low cost from synthetic rubber of very high molecular weight and a very narrow range of molecular weight dispersed in a liquid medium, by mixing the rubber in liquid form with an extending oil in a quantity about equal to or greater than the quantity of rubber, the reinforcing pigment, and all other ingredients, removing the dispersing medium, and producing essentially no permanent deformation of the dry rubber except that necessary to shape it to the form of the final product.

3,824,207

MANUFACTURE OF HIGH MOLECULAR WEIGHT SYNTHETIC LINEAR POLYAMIDES

John Anthony Carter, Coytre, near Pontypool, England, assignor to ICI Fibres Limited, Pontypool, England

No Drawing. Continuation-in-part of application Ser. No. 89,017, Nov. 12, 1970, which is a continuation of application Ser. No. 676,649, Oct. 19, 1967, both now abandoned. This application Sept. 21, 1972, Ser. No. 290,921

Claims priority, application Great Britain, Nov. 9, 1966, 50,214/66

Int. Cl. C08f *45/04*

U.S. Cl. 260—37 N 11 Claims

The invention comprises a method which uses a single stage continuous process to produce a pigmented high molecular weight linear polyamide. The pigment is injected into the reaction mass of monomers used to prepare the polyamide substantially at the mid-point of the reaction chamber for producing the pigmented polyamide. The process is performed at elevated pressures and temperatures.

3,824,208

PROCESS FOR FORMING A FREE-FLOWING PARTICULATE POLYMER MIXTURE FROM A VISCOUS TACKY POLYMER

Ernest A. Link, Utica, Mich., and Marcel P. Scarbel, Scotia, N.Y., assignors to General Electric Company

No Drawing. Filed Mar. 5, 1973, Ser. No. 338,380

Int. Cl. C08g *51/04*

U.S. Cl. 260—375 B 36 Claims

A process for producing a free-flowing particulate polymer mixture comprising adding from 15 and more preferably from 20 to 900 parts of a filler to 100 parts of a viscous tacky polymer having a viscosity of anywhere from 1000 centipoise to 200,000,000 centipoise at 25° C., and acting on that mixture until the ingredients are formed into a free-flowing particulate mixture. Prior to the application of reducing means to said mixture of filler and polymer so as to break it up into a free-flowing particulate mixture, there may be added various ingredients to the composition. In addition, these ingredients can be added to the filler and polymer simultaneously as the filler and polymer are being acted upon by various means so as to form the particulate mixture. The preferred means for acting upon the polymer and filler mixture so as to break it or reduce it to a free-flowing particulate mixture is mechanical shear means. The foregoing process is especially directed to the forming of a free-flowing particulate mixture from a diorganopolysiloxane polymer having a viscosity of 100,000 centipoise to 200,000,000 centipoise at 25° C. and a filler.

3,824,209

POLYESTER PLASTIC COMPOSITIONS CONTAINING HALOGENATED ARYL FLAME RETARDANTS

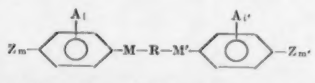
Arnold L. Anderson, Alma, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 260,240, June 6, 1972. This application Feb. 8, 1973, Ser. No. 330,773

Int. Cl. C08g *51/60*

U.S. Cl. 260—45.9 R 29 Claims

Plastic compositions containing polyesters and halogenated aryl compounds having the formula



wherein Z is bromine or chlorine, *m* and *m'* are integers having a value of 1–5, *i* and *i'* are integers having a value of 0–2, R is herein defined, M and M' are each independent and are from the group oxygen, nitrogen or sulfur with the proviso that M and M' cannot concurrently be oxygen in both cases, and A is chlorine, cyano, nitro, lower alkoxy, lower alkyl, fluorine, dialkylamino, phenyl, halo-phenyl, benzyl, or halo-benzyl.

3,824,210

ORGANOTIN SALTS OF HYDROXY-SUBSTITUTED ALKANOIC ACIDS: STABILIZERS FOR POLYVINYL CHLORIDE

Laurence F. King, Mooretown, Ontario, Canada, assignor to Esso Research and Engineering Company

Filed Jan. 12, 1972, Ser. No. 217,268

Int. Cl. C08f *45/62*

U.S. Cl. 260—45.75 K 7 Claims

An improved polyvinyl chloride and a process for preparing said polymer which comprises including in the reactant mixture a stabilizer lubricant comprising an alkyl tin hydroxystearate.

3,824,211

POLYESTERS OF 4,4'-HEXAFLUOROISOPROPYLIDENE DIPHENOL

William W. Howerton, 55 Todmorden Drive, Wallingford, Pa. 19086

No Drawing. Continuation-in-part of application Ser. No. 89,516, Nov. 13, 1970, which is a continuation-in-part of application Ser. No. 612,299, Jan. 26, 1967, both now abandoned. This application July 6, 1972, Ser. No. 269,374

Int. Cl. C08g *17/08*

U.S. Cl. 260—47 C 6 Claims

[illegible] relates to a unique thermally stable polymer that is particularly useful in protective coating compositions and paint systems. The polymer is prepared by an interfacial polymerization process at room temperature wherein hexafluoroacetone Bisphenol A is mixed in one phase and iso and/or terephthaloyl chloride is mixed in the other phase in the presence of a suitable terminator. Various proportions of the hexafluoroacetone Bisphenol A and the phthaloyl chloride are optionally replaced by various specified difunctional intermediates.

3,824,212

PROCESS FOR PREPARING HIGHER MOLECULAR WEIGHT POLYEPOXIDE PRODUCTS BY REACTING A POLYEPOXIDE WITH A PHENOL IN PRESENCE OF TETRAALKYLAMMONIUM HALIDES

Feije H. Sinnema and Henry van Zwet, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Jan. 18, 1973, Ser. No. 324,698

Claims priority, application Great Britain, Jan. 21, 1972, 3,101/72

Int. Cl. C08g *30/04*

U.S. Cl. 260—47 EP 13 Claims

A process for preparing higher molecular weight polyepoxide compounds from lower molecular weight polyepoxides by condensing said lower molecular weight polyepoxides (i.e., below about 3500) with a polyhydric phenol in the presence of a tetraalkylammonium halides catalysts employed within a certain critical range and at a certain critical temperature range is disclosed. More particularly, solid epoxy resins are prepared by the fusion of diphenylol propane with a low molecular weight epoxy resin at 140 to 190° C. in the presence of 0.05 to 2 meq. of a tetraalkylammonium chloride or bromide per 100 g. of epoxy resin in the presence of less than 1% by weight of a high boiling solvent.

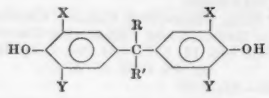
3,824,213

ACID-INTERCHANGE REACTION FOR FORMING HALOGENATED AROMATIC POLYESTERS

Robert W. Stackman, Morristown, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Apr. 16, 1973, Ser. No. 351,206
Int. Cl. C08g *17/003*
U.S. Cl. 260—47 C 15 Claims

An acid interchange reaction adapted to form halogenated aromatic polyesters is disclosed. An aliphatic carboxylic acid ester of a bisphenol of the structural formula:



wherein X is chlorine or bromine, Y is hydrogen, chlorine or bromine with the provision that when X is chlorine, Y is hydrogen or chlorine and when X is bromine, Y is hydrogen or bromine, R and R' be the same or different and represent lower alkyl groups or hydrogen or may, together, constitute a cyclic hydrocarbon group; is reacted at a temperature of about 220° C. to about 350° C. with an aromatic acid mixture of from about 10 to about 60 percent of the mixture of terephthalic acid and, correspondingly, from about 90 to about 40 percent of the mixture of isophthalic acid in a common solvent for the reactants to form the polyester. The reaction is performed in the presence of a catalytically effective amount of a cobalt, nickel or manganese salt of an aliphatic carboxylic acid.

3,824,214

HALOVINYLIDENE ARYLENE POLYMERS AND PROCESS FOR MAKING THE SAME

Tohru Takakoshi, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed Mar. 20, 1973, Ser. No. 343,139
Int. Cl. C08g *5/00*
U.S. Cl. 260—52 12 Claims

Halovinylidene arylene polymers are prepared from the dihydrohalogenation of the polymeric reaction product of an aromatic compound containing nuclearly-bonded hydrogen and either chloral or bromal, in the presence of a strong acidic catalyst.

3,824,215

CROWN ETHER POLYMERS PREPARED FROM CHLORAL, BROMAL OR GLYOXYLIC ACID

Tohru Takekoshi, Scotia, and Jimmy L. Webb, Ballston Lake, N.Y., assignors to General Electric Company

No Drawing. Filed Mar. 20, 1973, Ser. No. 343,140
Int. Cl. C08g *5/00*
U.S. Cl. 260—52 4 Claims

Crown ether polymers are prepared from the reaction of a crown ether containing nuclearly bonded hydrogen and either chloral, bromal, or glyoxalic acid in the presence of a strong acidic catalyst.

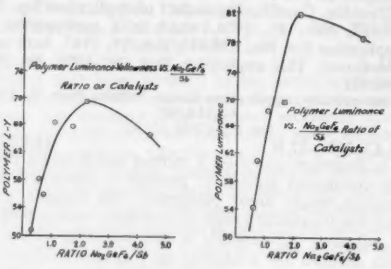
3,824,216

POLYMER CATALYST

Jack Ernest Schweitzer, 2 Sinclair St., Kingston, Ontario, Canada

Filed May 8, 1972, Ser. No. 251,120
Int. Cl. C08g *17/015*
U.S. Cl. 260—75 R 12 Claims

A process for manufacturing a linear fibre- and film-forming polyester which comprises reacting a diol with a dicarboxylic acid or an ester-forming derivative thereof and polycondensing the resulting dicarboxylate in the presence of a polycondensation catalytic material selected from alkali metal hexafluorogermanates, alkaline earth metal hexafluorogermanates, mixtures of alkali metal hexafluorogermanates with antimony and mixtures of an alkaline earth metal hexafluorogermanate with antimony.


Polymer Luminance-Yellowness Vs. Na_2GeF_6 / Sb Ratio of Catalysts
POLYMER LUMINANCE
RATIO Na_2GeF_6/Sb
Polymer Luminance Vs. Na_2GeF_6 Ratio of Sb Catalysts
POLYMER LUMINANCE
RATIO Na_2GeF_6/Sb

3,824,217

POLYISOCYANATE-ARYL DIOXIME ADDUCTS

Wilson A. Barker, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

No Drawing. Filed Nov. 22, 1972, Ser. No. 308,778
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 R 11 Claims

Adducts of aryl dioximes and polyisocyanates are described containing from one to two moles of polyisocyanate per mole of dioxime and in which all of the oxime groups are reacted with isocyanate. These adducts are incorporated in conventional rubber-to-metal adhesive compositions to provide single-package, shelf-stable adhesives having improved adhesion.

3,824,218

PROTECTIVE SKIN CREAM

Lawrence W. McKenna, Jr., Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 12, 1970, Ser. No. 45,912
Int. Cl. A61k *7/00*
U.S. Cl. 424—78 7 Claims

Disclosed herein is a skin cream which, when applied topically to the skin, provides an invisible protective coating which is a barrier against aqueous and polar organic solvents. The barrier component ingredient in the skin cream is a copolymer of a vinyl ester and a monoalkyl ester of maleic anhydride where the alkyl group contains from 14 to 22 carbon atoms.

3,824,219

PROCESS FOR PREPARING POLYCATIONICALLY ACTIVE POLYMERS OF TETRAHYDROFURAN

Samuel Smith, Roseville, and Allen J. Hubin, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Original application Feb. 10, 1966, Ser. No. 527,399. Divided and this application June 23, 1970, Ser. No. 59,770
Int. Cl. C08f *1/74, 1/70, 5/04*
U.S. Cl. 260—79.3 R 8 Claims

A process for polymerizing cationically polymerizable cyclic ether monomers to prepare terminally polycationically active polymers is described.

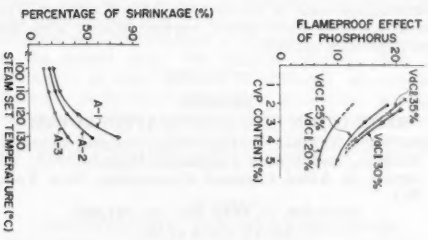
3,824,220
POLYCATIONICALLY ACTIVE POLYMERS
Samuel Smith, Roseville, and Allen J. Hubin, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation of abandoned application Ser. No. 290,218, June 24, 1963. This application Feb. 10, 1966, Ser. No. 527,399
Int. Cl. C08f *1/74, 5/04, 27/06*
U.S. Cl. 260—79.3 R **8 Claims**

Polymers which are free of alkylatable groups and which are cationically active at at least two ends, each of which ends have bonded thereto only a radical which in anionic form is a non-terminating anion in the polymerization of tetrahydrofuran and is an anion of a protonic acid stronger than 100% sulfuric acid are described.

3,824,221
METALLATED POLYMERS
Pudens Leonard Ragg, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Jan. 2, 1970, Ser. No. 456
Claims priority, application Great Britain, Jan. 9, 1969, 1,320/69; June 24, 1969, 13,889/69
Int. Cl. C07c *45/02;* **C08f** *3/00, 3/02*
U.S. Cl. 260—80 PS **4 Claims**

Metallated polymers and copolymers and styrylphosphine containing a plurality of PR_2 groups (where R is a hydrocarbyl group) as substituents of the benzene rings, transition metal atoms being co-ordinated to the phosphorus atoms. Several methods of preparation are described. The metallated polymers may be used to catalyse a variety of liquid or gas phase organic reactions, such as hydroformylation, olefin oligomerisation, hydrogenation and disproportionation, the reactions for which they are effective depending on the choice of metal and polymer. Copolymers, especially with styrene, are also included.

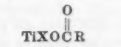
3,824,222
FLAMEPROOF MODACRYLIC FIBERS
Yoshihisa Shichijo, Hideo Sato, Toshio Iwasa, and Yasuo Uchida, Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha
Filed Nov. 5, 1971, Ser. No. 196,100
Claims priority, application Japan, Nov. 5, 1970, 45/96,831
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.71 **7 Claims**



Modacrylic fibers having excellent flameproof property and retaining the superior whiteness, heat-stability, etc. of acrylonitrile polymer fibers are produced from the polymers containing, as principal components, 50% by weight or more of acrylonitrile, 25% by weight or more of vinylidene chloride and 0.1–3% by weight of bis(2-chloroethyl)vinylphosphonate, and if necessary, as additional component, at least one copolymerizable ethylenically unsaturated compound.

3,824,223
PROCESS FOR PREPARING A COPOLYMER OF A CONJUGATED DIENE AND ETHYLENE
Kiyoshige Hayashi, Tokyo, and Akihiro Kawasaki and Isao Maruyama, Ichihara, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan
Filed May 27, 1971, Ser. No. 147,418
Claims priority, application Japan, June 10, 1970, 45/49,470, 45/49,471, 45/49,472, 45/49,473
The portion of the term of the patent subsequent to June 5, 1990, has been disclaimed
Int. Cl. C08d *3/04, 1/14*
U.S. Cl. 260—85.3 R **14 Claims**

Alternating copolymers and/or ethylene rich random copolymers of a conjugated diene and ethylene are formed by reacting the conjugated diene and ethylene in the presence of a catalyst comprising (A) an organoaluminum compound having the formula AlR_3 wherein R represents a hydrocarbon radical selected from the group consisting of a C_1–C_{12} alkyl, cycloalkyl, aryl and aralkyl radical and (B) an organotitanium compound having



structure wherein R is the same as defined above and X is a halogen.

3,824,224
PROCESS FOR PREPARING ALTERNATING COPOLYMERS OF BUTADIENE AND ALPHA-OLEFINS
Akihiro Kawasaki and Isao Maruyama, Ichihara, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan
No Drawing. Original application Apr. 17, 1970, Ser. No. 29,678, now Patent No. 3,700,638. Divided and this application June 5, 1972, Ser. No. 259,593
Claims priority, application Japan, Apr. 25, 1969, 44/31,429; May 13, 1969, 44/36,162; June 19, 1969, 44/47,913; July 3, 1969, 44/52,149; Aug. 15, 1969, 44/54,143; Sept. 10, 1969, 44/71,260; Sept. 25, 1969, 44/75,828; Sept. 30, 1969, 44/77,410, 44/77,411; Oct. 9, 1969, 44/80,281; Oct. 31, 1969, 44/86,898, 44/86,899; Dec. 4, 1969, 44/96,888
The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed
Int. Cl. C08d *1/14, 3/02, 3/06*
U.S. Cl. 260—85.3 R **7 Claims**

A process for preparing an alternating copolymer of butadiene and α-olefine having the formula of CH_2=CHR, wherein R represents phenyl or a normal or branched chain lower alkyl radical, which comprises contacting butadiene and the α-olefine in liquid phase with a catalyst system of an organoaluminum compound, a vanadium compound having V—X linkage (X is halogen) and a compound having M—OR linkage (M is an atom whose electro negativity (H. O. Pritchard, Chem. Rev., *55*, 745 (1955)) is lower than 2.2 and R is a hydrocarbon radical of alkyl, aryl, cycloalkyl or halogenated ether radical) or a compound having $(O—M)_x—(O—M')_y—OR$ linkage (M is defined as above and M' can be defined by the same definition given in M). Optionally, a halogen atom, a halogen containing compound, a metal oxide or a metalloid oxide can be added to the above mentioned three component catalyst system as the fourth component to further improve the catalytic properties. The alternating copolymers obtained by this invention are rubber-like in

character and can be used as polymeric plasticizers, in adhesives and can be vulcanized with sulfur or a sulfur compound to produce vulcanized elastomers.

3,824,225

NON-CYCLOPOLYMERIZED POLY-1-VINYLURACILS

Howard Kaye, College Station, Tex., assignor to Research Corporation, New York, N.Y.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,928
Int. Cl. C08f 7/12
U.S. Cl. 260—88.3 R 2 Claims

It has been discovered that stereoregular non-cyclopolymerized poly-1-vinyluracils are produced under conditions wherein cyclopolymerization is substantially completely repressed by carrying out γ-radiation initiated polymerization of a vinyluracil, such as the compound 1-vinyluracil, under conditions wherein,

(1) polymerization is carried out at a low temperature;
(2) polymerization is carried out at high concentration of the monomer;
(3) polymerization is carried out in the solid state;
(4) polymerization is carried out employing negatively charged monomers and/or
(5) polymerization is carried out wherein the monomers, the 1-vinyluracils, contain bulky substituent groups.

Combinations of the aforesaid polymerization conditions are usefully employed to produce the desired stereoregular non-cyclopolymerized poly-1-vinyluracils.

3,824,226

PROCESS FOR THE PRODUCTION OF TRANS-1,2-POLY-1,3-PENTADIENE

Peter Gunther, Opladen, Wolfgang Oberkirch, Cologne, Gottfried Pampus, Leverkusen, Friedrich Haas, Cologne, and Gunter Marwede, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Mar. 4, 1971, Ser. No. 121,202, now abandoned. Divided and this application Mar. 7, 1973, Ser. No. 338,857
Claims priority, application Germany, Mar. 28, 1970, P 20 15 153.5
Int. Cl. C08d 1/14, 3/04
U.S. Cl. 260—94.3 11 Claims

A catalyst system for the stereospecific polymerisation of 1,3-pentadiene into trans-1,2-poly-1,3-pentadiene, comprising

(a) an anhydrous cobalt salt
(b) an acid amide or an ether and
(c) an organoaluminium compound

and a process for polymerising 1,3-pentadiene in an inert solvent at temperatures of from $-50°$ to $+100°$ C. using the catalyst.

3,824,227

DECAPEPTIDE [D-Phe]^2 ANALOG OF LUTEINIZING HORMONES RELEASING FACTOR AND INTERMEDIATES THEREOF

Richard W. Rees, Bryn Mawr, and Sie Yearl Chai, Philadelphia, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Apr. 11, 1973, Ser. No. 350,302
Int. Cl. A61k 27/00; C07c 103/52
U.S. Cl. 260—112.5 9 Claims

[D-Phe]^2-LRF, an analog of the decapeptide luteinizing hormone release factor (LRF) is described as well as its synthesis by solid phase techniques and novel intermediates formed by such synthesis. The novel decapeptide is an antagonist of LRF *in vitro*.

3,824,228

OLIGOPEPTIDE DERIVATIVES AND PROCESS FOR THE PREPARATION THEREOF USING GLYCIDYL ESTERS OF CARBOXYLIC ACIDS TO REACT WITH PROTEIN-DIAMINE AMINOLYZATES

Hans Werner Eckert, Dusseldorf, and Peter Nikolaus, Dusseldorf-Holthausen, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Oct. 2, 1972, Ser. No. 294,187
Claims priority, application Germany, Oct. 18, 1971, P 21 51 739.5
Int. Cl. C07g 7/00; C08h 1/00
U.S. Cl. 260—117 9 Claims

The invention relates to a process for the preparation of novel oligopeptide derivatives which can be used in hair conditioning and cosmetic preparations.

3,824,229

3-OXO-1,2,4-TRIAZINE NUCLEOSIDES

Gabor L. Szekeres and Roland K. Robins, Santa Ana, and Robert A. Long, Costa Mesa, Calif., assignors to International Chemical and Nuclear Corporation, Pasadena, Calif.

No Drawing. Filed July 20, 1972, Ser. No. 273,464
Int. Cl. C07d 51/52, 55/10
U.S. Cl. 260—211.5 R 9 Claims

3-Oxo-1,2,4-triazine nucleosides are disclosed which have demonstrated antitumor, antimicrobial and antiviral activity. 3-Oxo-1,2,4-triazine N_1-oxide is also disclosed which is an intermediate in the synthetic process. Antitumor efficacy has been demonstrated with respect to KB, Hep–2, Hela, and RK–13 cells.

3,824,230

1,2,4,5 - TETRAHYDROPYRROLO[3,2,1-jk][1,4]BENZODIAZEPIN-7(6H)-ONES AND 1.2.4,5 - TETRAHYDROPYRROLO[1,2,3 - ef][2,5]BENZODIAZEPIN-6(7H)-ONES

Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application Nov. 3, 1969, Ser. No. 873,720, now Patent No. 3,642,822. Divided and this application June 21, 1971, Ser. No. 155,283
Int. Cl. C07d 53/02
U.S. Cl. 260—239.3 T 6 Claims

1,2,4,5,6,7 - Hexahydropyrrolo[3,2,1-jk][1,4]benzodiazepines, 1,2,4,5,6,7 - hexahydropyrrolo[1,2,3 - ef][1,5]benzodiazepines, processes for preparing the same and intermediates used to prepare said benzodiazepines. The benzodiazepines have central nervous system stimulant and depressant activity.

3,824,231

RESOLUTION OF α-AMINOCAPROLACTAM

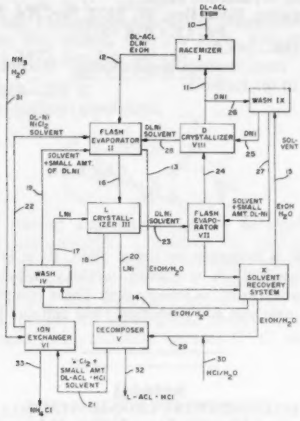
Anne Marie Kubanek, Basking Ridge, Stylianos Sieniades, Madison, and Robert Fuhrmann, Hanover, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,409
Int. Cl. C07d 41/06
U.S. Cl. 260—239.3 R 11 Claims

L-α-aminocaprolactam is obtained by a process comprising the steps of:

(a) Forming a complex of D,L-α-aminocaprolactam with a metal ion selected from the group consisting of Ni^{++}, Co^{++}, Cu^{++}, Fe^{++}, Fe^{+++} and Zn^{++};

(b) Optically resolving said D,L-α-aminocaprolactam metal complex whereby separate phases rich in D and L-α-aminocaprolactam metal complex, respectively, are obtained;



(c) Recovering and decomposing L-α-aminocaprolactam metal complex to afford L-α-aminocaprolactam plus metal ion; and

(d) Racemizing D-α-aminocaprolactam metal complex to afford D,L-α-aminocaprolactam metal complex.

3,824,232

PROCESS FOR MANUFACTURING WATER SOLUBLE ALKOXYLATED METHYLOL MELAMINES

Gunter Pusch, Leitershofen, near Augsburg, and Dieter Walz, Heinhofen, near Augsburg, Germany, assignors to Chemische Fabrik Pfersee G.m.b.H., Augsburg, Germany

No Drawing. Filed Feb. 2, 1971, Ser. No. 112,073

Claims priority, application West Germany, Feb. 5, 1970, P 20 05 166.5

Int. Cl. C07d *55/32*

U.S. Cl. 260—249.6 **6 Claims**

A process for producing water soluble alkoxylated methylol melamines which comprises heating in the first stage in the presence of alkalis 1 mol melamine with 2 to 6 mols paraformaldehyde in 0.4 to 1.2 mols of a bivalent or tervalent alcohol with a total of 2 to 6 carbon atoms, whereby up to 60% by weight of the polyalcohol can be exchanged with at least the same amount by weight of a low univalent aliphatic alcohol used for alkoxylation in the second stage. The heating continues until an opalescent to clear solution is produced. Immediately thereafter in the second stage after the addition of excessive low univalent aliphatic alcohol the solution is acidly alkoxylated in the usual manner and neutralized. Possibly the excessive univalent alcohol is distilled off.

3,824,233

ANTHELMINTIC PHENYLHYDRAZONES

Henry Friedman, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed July 6, 1972, Ser. No. 269,338

Int. Cl. C07d *63/12*

U.S. Cl. 260—240 G **6 Claims**

A class of cinnamoyl and thiopheneacryloyl chloride phenylhydrazones, which are new compounds to the organic chemical art, are effective in the treatment of helminthiasis in domestic and companion animals. The compounds may be substituted on either or both of their rings. The compounds are particularly effective against helminths of the economically-important ruminant animals.

3,824,234

7,8,9,10-TETRAHYDRO - 2 - METHOXY-7-MORPHOLINOMETHYLCYCLOHEPT[b]INDOL-6(5H)-ONE

Joseph William Epstein, Monroe, and Leon Goldman, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,937

Int. Cl. C07d *87/40*

U.S. Cl. 260—247.5 R **1 Claim**

This disclosure describes compounds of the class of substituted tetrahydrocyclohept[b]indol-6(5H)-ones useful as antifungal and analgetic agents.

3,824,235

PROCESS FOR THE EPOXIDATION OF UNSATURATED COMPOUNDS

Axel Kleemann, Oberursel, Manfred Krüger, Offenbach, Gerd Schreyer, Grossauheim, Otto Weiberg, Neu-Isenburg, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Original application Aug. 4, 1970, Ser. No. 60,872, now Patent No. 3,708,507. Divided and this application Aug. 23, 1972, Ser. No. 283,040

Claims priority, application Germany, Aug. 21, 1969, P 19 42 557.1

Int. Cl. C07d *1/08, 1/16, 1/18*

U.S. Cl. 260—348.5 L **7 Claims**

Olefinically unsaturated organic compounds are epoxidized with solutions of organic percarboxylic acid. An aqueous solution of the percarboxylic acid having at least 2 carbon atoms is dehydrated by extraction and/or distillation with the compound to be epoxidized. The dehydrated product is held at 30–100° C. and subjected to a subsequent reaction.

3,824,236

BRIGHTENERS

Alfons Dorlars and Otto Neuner, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

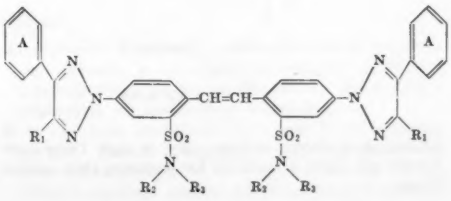
No Drawing. Filed June 28, 1971, Ser. No. 157,614

Claims priority, application Germany, June 30, 1970, P 20 32 172.6

Int. Cl. C07d *55/02*

U.S. Cl. 260—240 C **8 Claims**

Stilbene compounds of the formula



in which

R_1 represents hydrogen, alkyl, aralkyl or aryl,
R_2 denotes hydrogen, alkyl or aralkyl,
R_3 represents substituted alkyl radical,
R_2 and R_3 together with the N atom form a non-aromatic heterocyclic ring, and
the phenyl radicals A optionally carry further substituents, as well as their preparation and their use as optical brighteners

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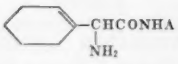
3,824,237
CEPHALOSPORANIC AND DESACETOXY-CEPHALOSPORANIC ACID COMPOUNDS
Tsunehiko Asako, Kyoto, Takenobu Soma, Suita, Hirotomo Masuya, Kobe, Tadatsugu Harukawa, Kyoto, and Takuichi Miki, Amagasaki, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Oct. 12, 1971, Ser. No. 188,622
Claims priority, application Japan, Oct. 12, 1970, 45/89,918; May 24, 1971, 46/35,382; Aug. 3, 1971, 46/58,905; Aug. 28, 1971, 46/66,104
Int. Cl. C07d *99/16, 99/24*
U.S. Cl. 260—243 C **2 Claims**

Compounds of the formula:



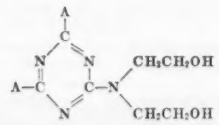
wherein A is a group which forms 7-aminocephalosporanic acid or 7-aminodesacetoxycephalosporanic acid are provided, which have both a broad spectrum antibacterial action and strong activity against *Escherichia coli*.

3,824,238
METHOD FOR THE PURIFICATION OF 7-AMINO-DESACETOXYCEPHALOSPORANIC ACID
Friedrich Dursch, Hopewell, and Theodore Michael Siewarga, Parlin, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
No Drawing. Filed Apr. 5, 1972, Ser. No. 241,425
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **9 Claims**

Purified 7-aminodesacetoxycephalosporanic acid may be obtained as a crystalline, free flowing white powder with an iron content of less than 10 p.p.m. by reprecipitation from a mildly basic aqueous solution from which impurities have been removed by treatment with a selective solvent, adsorbent or the like.

3,824,239
DISUBSTITUTED DIETHANOL-AMINO-S-TRIAZINES
Thirumurti L. Narayan, Riverview, Moses Cenker, Trenton, Peter T. Kan, Plymouth, and John T. Patton, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed Dec. 29, 1972, Ser. No. 319,906
Int. Cl. C07d *55/18*
U.S. Cl. 260—249.5 **6 Claims**

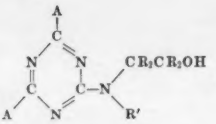
Novel trisubstituted triazines corresponding to the formula:



wherein A is alkoxy, aryloxy, alkyl or aryl. These compounds are useful as catalysts for preparing rigid cellular foams.

3,824,240
UNSYMMETRICALLY-SUBSTITUTED-s-TRIAZINES
Thirumurti L. Narayan, Riverview, Moses Cenker, Trenton, Peter T. Kan, Plymouth, and John T. Patton, Jr., Wyandotte, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed Dec. 29, 1972, Ser. No. 319,930
Int. Cl. C07d *55/18*
U.S. Cl. 260—249.5 **5 Claims**

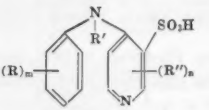
Novel unsymmetrically-substituted triazines corresponding to the formula:



wherein R is hydrogen or lower alkyl, R′ is lower alkyl or hydroxyalkyl, A is alkoxy, aryloxy, alkyl, aryl or $—NR_2''$ wherein R″ is lower alkyl. These compounds are useful as catalysts for preparing rigid cellular foams.

3,824,241
PYRIDINESULFONIC ACIDS
Renat Herbert Mizzoni, Long Valley, N.J., and Herbert Morton Blatter, Basalt, Colo., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 67,205, Aug. 26, 1970, which is a continuation-in-part of application Ser. No. 20,833, Mar. 18, 1970, now Patent No. 3,674,794, dated July 4, 1972, which in turn is a continuation-in-part of abandoned application Ser. No. 876,038, Nov. 12, 1969. This application June 30, 1972, Ser. No. 267,775
Int. Cl. A61k *27/00;* **C07d** *31/48*
U.S. Cl. 260—294.8 R **3 Claims**

New 4-arylamino-3-pyridinesulfonic acids, e.g. those of the formula



R=H, alkyl, alkanoyl, free, esterified or etherified OH or SH, CF_3, NO_2, an amino, free or functionally converted carboxy or sulfo
R′=H, alkyl or acyl
R″=H or alkyl
m=1–5
n=1 or 2

the N-oxide, esters or salts thereof are diuretic agents.

3,824,242
SYNTHESIS OF MEPERIDINE
Robert Levine and Vance Bell, Pittsburgh, Pa., assignors to Research Corporation, New York, N.Y.
No Drawing. Filed Jan. 26, 1973, Ser. No. 326,641
Int. Cl. C07d *31/36*
U.S. Cl. 260—295 R **7 Claims**

There is provided a method of synthesis of the analgesic meperidine, otherwise known as 1-methyl-4-phenyl-4-carbethoxypiperidine which comprises sequentially treating 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine with a lithiumalkyl and an ethyl haloformate or diethyl carbonate to yield 1 - methyl-4-phenyl-4-carbethoxy-1,2,3,4-tetrahydropyridine which is reduced by catalytic hydrogenation to yield the desired meperidine.

3,824,243

MONO-o-PHTHALYL PIPERAZINE AND MONO-PIPERAZINE MONO-PHTHALATE DI-SALTS

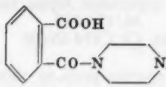
Edward Henderson, deceased, late of New York, N.Y., by Kathryn S. Henderson, executrix, 220 Central Park S., New York, N.Y. 10019

No Drawing. Continuation-in-part of abandoned application Ser. No. 83,602, Oct. 23, 1970. This application Nov. 24, 1972, Ser. No. 309,199

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 C 1 Claim

Mono-o-phthalyl piperazine,



and salts thereof with physiologically acceptable acids, useful as anthelmintics; a method for making mono-phthalyl piperazine by reacting phthalic anhydride and piperazine between 0° C. and 50° C.; mono-piperazine di-salts of o-, m-, and p-phthalic acids, useful as anthelmintics; a method for making said di-salts by reacting a phthalic acid with piperazine between 0° C. and 50° C.

3,824,244

3-(4-HALOPHENYL)-3-(2-PYRIDYL)-3,4-DIHYDRO ISOCOUMARINS

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Lake Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,352

Int. Cl. C07d *31/34*

U.S. Cl. 260—295 F 2 Claims

Phenyl and substituted phenyl pyrido benzazepines and benzoquinolizines, e.g. 11(4 - chlorophenyl) - 1,3,4,11a-tetrahydro-2H-benzo - [b] - quinolizine-6-(11h)-one, and 12-hydroxy-12-phenyl - pyrido - [1,2-b][2]-benzazepin-6-one, are useful as major tranquilizers.

3,824,245

MANUFACTURE OF BIPYRIDYLIUM SALTS AND RELATED COMPOUNDS

John Edward Colchester, John Francis Cairns, and John Gerard Carey, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Application July 28, 1970, Ser. No. 59,030, now Patent No. 3,696,113, dated Oct. 3, 1972, which is a continuation-in-part of abandoned application Ser. No. 811,617, Mar. 28, 1969. Divided and this application July 11, 1972, Ser. No. 270,634

Claims priority, application Great Britain, Apr. 16, 1968, 17,893/68

Int. Cl. C07d *31/44*

U.S. Cl. 260—295 AM 16 Claims

There is provided a method of converting disubstituted tetrahydrobipyridyls to the corresponding bipyridinium salt by treating the tetrahydrobipyridyl with a dehydrogenating agent such as platinum metals and oxides to convert the tetrahydrobipyridyl to the corresponding dihydrobipyridyl and subsequently oxidizing the dihydrobipyridyl to the corresponding salt.

3,824,246

PROCESS FOR THE PREPARATION OF 2-SUBSTITUTED-1,3,4-THIADIAZOLE-5-THIOLS

George W. Huffman, Carmel, and Bryan B. Molloy, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Sept. 5, 1972, Ser. No. 285,972

Int. Cl. C07d *91/62*

U.S. Cl. 260—302 SD 5 Claims

A new and more efficient process for the preparation of 2-substituted-1,3,4-thiadiazole-5-thiols which produces yields of 85–90% or higher comprises sequentially treating a thioamide with hydrazine, carbon disulfide, an alkali-metal hydroxide and acid. The thiols are useful intermediates for certain cephalosporin antibiotics.

3,824,247

2-(1,3,3-TRIMETHYLUREIDO)-1,3,4-THIADIAZOLE-5-N,N-DIMETHYLSULFONAMIDE

William C. Doyle, Jr., Leawood, and Loren W. Hedrich, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Continuation-in-part of application Ser. No. 119,417, Feb. 26, 1971. This application Sept. 1, 1971, Ser. No. 177,178

Int. Cl. C07d *91/62*

U.S. Cl. 260—306.8 D 1 Claim

The industrial herbicide 5 - (1,3,3 - trimethylureido)-N,N - dimethyl - 1,3,4 - thiadiazole - 2-sulfonamide and other compounds of similar structure may be made by a novel procedure in which the first step is the oxidative chlorination of a 2-alkylamino-5-mercapto-1,3,4-thiadiazole to yield the corresponding sulfonyl chloride. The subject compound which possesses five methyl substituent groups is more effective as a herbicide than compounds which contain other alkyl substituents or a lesser number of methyl substituents.

3,824,248

POLY-HYDROXY-BIS-OXAZOLINES WITH HYDROXY GROUPS SUBSTITUTED WITH URETHANE GROUPS LINKED TO BETA-ETHYLENIC UNSATURATED GROUPS

Jean-Claude Mileo, Bernard Sillion, and Gabriel de Gaudemaris, Grenoble, France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants et Commissariai a l'Energie Atomique

No Drawing. Filed Feb. 3, 1972, Ser. No. 223,336

Claims priority, application France, Feb. 3, 1971, 7103684

Int. Cl. C07d *85/36*

U.S. Cl. 260—307 F 12 Claims

Poly-hydroxy-bis-oxazolines may have their hydroxy groups substituted with urethane groups linked to α,β-ethylenic unsaturated groups. The resulting new compounds may be admixed with vinyl monomers to provide coating compositions which may be applied onto supports and hardened by irradiation with ionizing rays.

3,824,249

ACYLAMINO TETRAZOLES

Gilbert Regnier, Chatenay-Malabry, Roger Canevari, Villebon-sur-Yvette, and Jean-Claude Le Douarec, Royat, France, assignors to Societe en nom Collectif "Science Union et Cie, Societe Francaise de Recherche Medicale," Suresnes, France

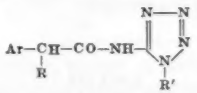
No Drawing. Filed May 24, 1972, Ser. No. 256,520

Claims priority, application Great Britain, June 15, 1971, 28,004/71

Int. Cl. C07d *55/56, 57/00*

U.S. Cl. 260—308 D 3 Claims

Acyloamino tetrazoles of the formula:



wherein

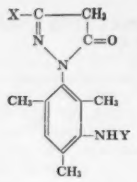
Ar is p-lower-alkylphenyl, p-cycloalkylphenyl, p-dialkylaminophenyl, p - cycloalkylaminophenyl, biphenylyl, halobiphenylyl, lower - alkylbiphenylyl, lower-alkoxybiphenylyl, or lower-alkoxy-β-naphthyl;

R is hydrogen, methyl or ethyl, and R′ is hydrogen, pyridyl, phenyl, halophenyl, lower-alkylphenyl or lower-alkoxyphenyl.

These compounds possess anti-inflammatory properties.

3,824,250
1-MESITYL-3-SUBSTITUTED PYRAZOLONES AS MAGENTA COLOR COUPLERS
Masao Sawahara and Kazuya Sano, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Nov. 16, 1971, Ser. No. 199,337
Claims priority, application Japan, Nov. 16, 1970, 45/100,911
Int. Cl. C07d *49/14, 49/16*
U.S. Cl. 260—310 A **9 Claims**

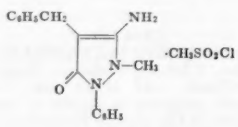
Magenta color couplers of the formula



wherein X represents an acylamino group or an ethoxy group, Y represents a hydrogen atom or an acyl group, and one of X or Y has a ballasting group with 17 to 25 carbon atoms. A process for preparing such couplers.

3,824,251
COMPLEX COMPOUND OF A SUBSTITUTED 3-AMINO-3-PYRAZOLIN-5-ONE AND METHODS OF PRODUCING AND FURTHER REACTING THE SAME
Hans von Castelmur, Basel, Switzerland, assignor to Solco Basel AG, Basel, Switzerland
Continuation-in-part of abandoned application Ser. No. 840,030, July 8, 1969. This application Feb. 15, 1972, Ser. No. 226,400
Claims priority, application Switzerland, July 12, 1968, 10,459/68
Int. Cl. C07d *49/16*
U.S. Cl. 260—310 A **11 Claims**

Complex compound of the formula



This complex compound is prepared by reacting 3-amino-4-benzyl-2-methyl-1-phenyl-3-pyrazolin - 5 - one (II) with methanesulfonyl chloride. Also provided is a process for preparing 4 - benzyl - 3 - methanesulfonamido-2-methyl-1-phenyl-3-pyrazolin-5-one by reacting the complex compound with an alkaline agent. Finally, a process for preparing compound II is provided.

3,824,252
PROCESS FOR PREPARING INDOLE
Marcello Massi Mauri, San Donato Milanese, and Pietro Antonio Moggi and Ugo Romano, Milan, Italy, assignors to Snam Progetti S.p.A., Milan, Italy
No Drawing. Filed Sept. 3, 1971, Ser. No. 177,866
Claims priority, application Italy, Sept. 7, 1970, 29,423/70
Int. Cl. C07d *27/56*
U.S. Cl. 260—319.1 **13 Claims**

Process for producing indole and its derivatives by oxidizing aromatic amines with an organic nitrocompound at temperatures ranging from 300° C. to 700° C. in the vapor phase in the presence of contact masses.

3,824,253
PROCESS FOR MANUFACTURING PROPANE SULTONE
Eiji Uematsu, Kunio Ishii, Masayuki Maehara, Hiroshi Takahashi, and Keiichiro Tsuji, Arai, Japan, assignors to Daicel Ltd., Osaka, Japan
No Drawing. Filed Dec. 28, 1971, Ser. No. 213,220
Claims priority, application Japan, Dec. 29, 1970, 46/126,395
Int. Cl. C07d *89/06*
U.S. Cl. 260—327 S **4 Claims**

A process for preparing propane sultone from a hydroxypropane sulfonic acid containing solution which is characterized by concentrating the solution until the concentration ratio within a specific range is reached and then subjecting the obtained concentrated solution to a continuous distillation in an agitated-film evaporator under a high vacuum of lower than 15 mm. Hg to distill and recover propane sultone.

3,824,254
METHOD OF PRODUCING Δ^1-TESTOLOLACTONE
Lev Natanovich Volovelsky, ulitsa Klochkovskaya 65, kv. 10, and Maya Yakovlevna Yakovleva, ulitsa Girshmana 19, kv. 44, both of Kharkov, U.S.S.R.
No Drawing. Filed July 17, 1972, Ser. No. 272,662
Int. Cl. C07d *7/06*
U.S. Cl. 260—343.2 S **5 Claims**

A method of producing Δ^1-testololactone resides in that $\Delta^{1,4}$-androstadienedi-3,17-one is oxidized with hydrogen peroxide in an acetic acid medium, and the final product is isolated.

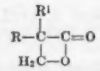
The thus-obtained Δ^1-testololactone finds application in medicine for treating of metastasizing mammary carcinoma.

3,824,255
PROCESS FOR THE PRODUCTION OF TETRONIC ACID
Karl-Josef Boosen, La Neuveville, Switzerland, assignor to Lonza Ltd., Basel, Switzerland
No Drawing. Filed Sept. 2, 1971, Ser. No. 177,448
Claims priority, application Switzerland, Sept. 4, 1970, 13,264/70
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 **9 Claims**

Preparation of tetronic acid from γ-haloacetoacetic acid by reaction with alkaline reagent in aqueous solution followed by evaporation to dryness and sublimation of the residue at elevated temperature and high vacuum.

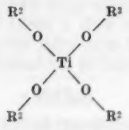
3,824,256
PURIFICATION OF α,α-DISUBSTITUTED-β-PROPIOLACTONES
William A. Ames, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Dec. 16, 1971, Ser. No. 208,904
Int. Cl. C07d *3/00*
U.S. Cl. 260—343.9 **14 Claims**

Polymerization grade α,α-disubstituted-β-propiolactone monomer having the general formula



wherein R and R^1 are selected from the group consisting of straight- or branched-chain alkyl groups of from

1 to 10 carbon atoms, substituted or unsubstituted cyclic hydrocarbon groups of from 6 to 10 carbon atoms, or wherein R and R^1 join to form a ring of from 6 to 10 carbon atoms, is effectively obtained from impure monomer containing residual manufacturing impurities by treating the impure lactone monomer with an alkyl orthotitanate having the formula



wherein R^2 is a straight- or branched-chain alkyl group of from 1 to 8 carbon atoms, and distilling the purified monomer from the resultant solution at reduced pressure. The procedure yields a very pure polymerization grade α,α-disubstituted-β-propiolacetone monomer which has a low polymerization index and from which polymer having a high inherent viscosity can be formed.

3,824,257

STABILIZATION OF α,α-DISUBSTITUTED-β-PROPIOLACTONES

Windell C. Watkins, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 2, 1971, Ser. No. 204,294
Int. Cl. C07d *3/00*
U.S. Cl. 260—343.9 **8 Claims**

α,α-Disubstituted-β-propiolactones having the general formula:

wherein R and R^1 are selected from the group consisting of hydrogen, straight- or branched-chain alkyl groups of from 1 to 10 carbon atoms, substituted or unsubstituted cyclic hydrocarbon groups of from 6 to 10 carbon atoms, or wherein R and R^1 join to form a ring of from 6 to 10 carbon atoms, are effectively stabilized against premature polymerization under extreme conditions such as, for example, high temperatures, by including in admixture therewith a stabilizing amount of a borate ester having the general formula:

$$(R^2O)_3B$$

wherein each R^2 is selected from the group consisting of a straight- or branched-chain alkyl group of from 1 to 8 carbon atoms, a substituted or unsubstituted benzyl group, or a substituted or unsubstituted phenyl group.

3,824,258

3-OXABICYCLO-[10.3.0]PENTADECENE-(6) AND ITS PREPARATION

Erich Klein and Albrecht Roth, Holzminden, Germany, assignors to Dragoco Spezialfabrik Konz. Riech- und Aromastoffe Gerberding & Co. GmbH

No Drawing. Filed June 30, 1972, Ser. No. 268,091
Claims priority, application Germany, Feb. 28, 1972, P 22 09 372.7
Int. Cl. C07d *5/32*
U.S. Cl. 260—346.2 R **9 Claims**

The novel compound 3-oxabicyclo-[10.3.0]pentadecene-(6) is prepared by reacting cyclododecene with paraformaldehyde in the presence of a Lewis acid as the catalyst. The product is useful as an odorant per se and in perfume compositions.

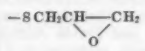
3,824,259

SULPHUR-CONTAINING EPOXIDES

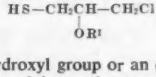
Richard Alan Oswald, Sawston, and Bernard Peter Stark, Stapleford, England, assignors to Ciba-Geigy Limited, Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 769,390, Oct. 21, 1968. This application Dec. 9, 1970, Ser. No. 96,676
Claims priority, application Great Britain, Oct. 26, 1967, 48,798/67
Int. Cl. C07d *1/20*
U.S. Cl. 260—348 R **5 Claims**

Compounds containing, per molecule, at least one end at most three groups of formula



attached to a carbon atom of an aliphatic chain or a cycloaliphatic nucleus. The compounds are prepared by reaction of a monothiol (I) of formula



where OR^1 is a hydroxyl group or an ester group, with a compound (II) containing at least one ethylenic double bond, when OR^1 represents an ester group hydrolysing this group to a hydroxyl group; and dehydrochlorinating the intermediary 1,2-chlorohydrin so obtained to form the 1,2-epoxide. These compounds may be used to stabilize chlorine-containing organic resins such as polyvinyl chloride against the degradative effects of heat and light. When used in conjunction with a curing agent, these compounds may be used to prepare coating and adhesive resins.

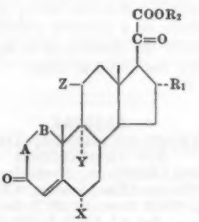
3,824,260

NOVEL PREGNANOIC ACID DERIVATIVES

Henry Laurent, Rudolf Wiechert, Klaus Prezewowsky, Helmut Hofmeister, Erich Gerhards, Karl Heinz Kolb, and Klaus Mengel, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed Aug. 30, 1972, Ser. No. 284,710
Claims priority, application Germany, Oct. 1, 1971, P 21 50 268.1; Jan. 27, 1972, P 22 04 358.9, P 22 04 361.4
Int. Cl. C07c *169/36*
U.S. Cl. 260—397.1 **62 Claims**

Pregnanoic acid derivatives of the formula



wherein X is hydrogen, halogen, or methyl; Y is hydrogen or halogen; Z is hydroxy or halogen having an atomic weight no greater than Y; R_1 is hydrogen or methyl; R_2 is hydrogen, alkali metal or saturated or unsaturated hydrocarbon of 1–18 carbon atoms which is unsubstituted or substituted by hydroxy, halo, alkoxy, carboxy, carbalkoxy, amino, alkylamino, dialkylamino, nitro or sulfato, wherein alkyl in each instance contains 1–4 carbon atoms; and —A—B— is —CH=CH—, —CCl=CH— or, when at least one of X, Y and R_1 is other than hydrogen, $—CH_2—CH_2$; possess pronounced topical anti-inflammatory activity.

3,824,261

BIOLOGICALLY ACTIVE MIXED ANHYDRIDES

Clive A. Henrick and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Oct. 25, 1972, Ser. No. 300,554
Int. Cl. A23j 7/00; C07f 9/02
U.S. Cl. 260—403 8 Claims

Mixed anhydrides of aliphatic substituted diolefinic carboxylic acids and dialkyl phosphoric acid, useful as insect control agents, bactericides and fungicides.

3,824,262

PROCESS FOR PREPARING ETHYLENIC CARBOXYLIC ACIDS

Lammert Heslinga, Maassluis, and Hendrix Jacob Johannes Pabon and David Adrian van Dorp, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,234
Claims priority, application Great Britain, Mar. 25, 1971, 7,775/71
Int. Cl. C08h 17/36
U.S. Cl. 260—409 9 Claims

Ethylenic acids of the structure $RCH_2—R^1—COOH$, where R is an aliphatic hydrocarbon radical containing from 1 to 5 *cis*-ethylenic bonds and R^1 is an ethylene or ethylene group, are prepared by selectively hydrogenating an acid $R_1CH_2CH=CHCOOH$ where R_1 contains from 1 to 5 acetylenic or *cis*-ethylenic bonds. The resulting polyenoic acids, for instance arachidonic acid, are useful as intermediates, especially in the preparation of prostagladins.

3,824,263

PROCESS FOR THE PRODUCTION OF ALKYLENEGLYCOL ESTERS

Wilfried Umbach, Langenfeld, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 889,753, Dec. 31, 1969. This application Aug. 17, 1972, Ser. No. 281,432
Claims priority, application Germany, Jan. 14, 1969, P 19 01 535.1
Int. Cl. C07c 67/00
U.S. Cl. 260—410.6 8 Claims

In the process of producing an alkyleneglycol ester of organic carboxylic acid which comprises reacting a higher organic carboxylic acid with an alkylene oxide in the presence of an oxyalkylation catalyst under oxyalkylation conditions and recovering said alkylene glycol ester, the improvement which comprises using a high molecular weight amine-oxide or a diamine dioxide of said oxyalkylation catalyst in the reaction of a higher organic carboxylic acid with the alkylene oxide.

3,824,264

PREPARATION OF MONOHYDROCARBYL TIN TRIHALIDES

Eric Jan Bulten, Bilthoven, Netherlands, assignor to Cosan Chemical Corporation, Clifton, N.J.

No Drawing. Filed June 8, 1972, Ser. No. 261,020
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 7 Claims

Monohydrocarbyl tin trihalides are produced in high yields by a process in which a stannous halide and a halohydrocarbon having at least one halogen bound to an aliphatic carbon atom are reacted in the presence of a catalytic amount of an organoantimony compound having at least one hydrocarbyl group bound to the antimony. The monohydrocarbyl tin trihalides prepared according to the process of this invention and their derivatives (such as hydrocarbyl stannonic acids) are important for the preparation of many biocides, polymer stabilizers and catalysts.

3,824,265

PREPARATION OF TRIALKYL LEAD SALTS OF ALIPHATIC MONOCARBOXYLIC ACIDS

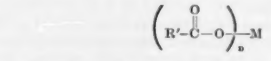
Richard D. Gorsich, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

No Drawing. Filed Dec. 21, 1961, Ser. No. 161,293
Int. Cl. C01f 7/00
U.S. Cl. 260—436 10 Claims

1. A process for the production of trialkyllead salts of aliphatic monocarboxylic acids which comprises reacting a trialkyllead halide with a metal salt of an aliphatic monocarboxylic acid in an ether solvent; said trialkyllead halide being represented by the formula

$$R_3PbX$$

wherein R is an alkyl group having 1–20 carbon atoms and X is a halogen, said metal salt being represented by the formula



wherein R′ is selected from the group consisting of hydrogen and an alkyl group containing 1–20 carbon atoms, M is an atom of a reactive metal capable of forming salts with aliphatic monocarboxylic acids, and *n* is valence of the metallic atom and said ether solvent is selected from the group consisting of tetrahydrofuran and ring alkylated derivatives thereof wherein each alkyl group contains from 1 to about 6 carbon atoms.

3,824,266

POLYISOCYANATES WHICH CONTAIN BIURET GROUPS

Werner Dietrich, Cologne, Kuno Wagner, Karl Hartwig Richert, and Helmut Kleimann, Leverkusen, and Christian König, Dormagen, Germany, and Walter Meckel, New Martinsville, W. Va., assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 98,121, Dec. 14, 1970. This application Feb. 5, 1973, Ser. No. 329,919
Claims priority, application Germany, Dec. 17, 1969, P 19 63 190.4
Int. Cl. C07c 119/04
U.S. Cl. 260—453 AB 5 Claims

Polyisocyanates which contain biuret groups are prepared by a process which comprises reacting a polyisocyanate with a diprimary aromatic diamine the reactivity of which amines with isocyanates are attenuated by electrophilic substituents or substituents which sterically hinder the amino groups such that intimate mixing of the reactants is possible with no immediate reaction such as, for example, the formation of polyureas taking place.

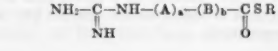
3,824,267

THIOLESTERS OF GUANIDINO ORGANIC ACIDS

Hiroyuki Ito, Suita, Yutaro Sasaki, Takatsuki, Shigetoshi Miyamoto, Osaka, Naohiro Kayama and Ikuo Kajiwara, Takatsuki, Yoichi Iguchi, Amagasaki, Kimiko Sakaguchi, Osaka, Kazuaki Hama, Ibaraki, Ikuko Yo, Osaka, Hiroko Tsutsui, Kawachinagano, Fusako Nishi, Nishinomiya, and Setsuro Fujii, Tokushima, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed Aug. 14, 1972, Ser. No. 280,485
Claims priority, application Japan, Aug. 19, 1971, 46/63,277; June 28, 1972, 47/64,761
Int. Cl. C07c 129/00
U.S. Cl. 260—455 R 6 Claims

A compound having the general formula



in which A is a straight chain or branched alkylene group having 1 to 10 carbon atoms, B is a bivalent aliphatic or alicyclic group, *a* is 0 or 1, *b* is 0 or 1, *a*+*b* is 1 or 2 and R is any one of the straight chain or branched alkyl group and carbethoxyalkyl group having 1 to 10 carbon atoms, alycyclic group, aromatic group and phenylalkyl group, each of the above-mentioned alycyclic group and aromatic group may be substituted by a lower alkyl group, carbethoxy group, carbethoxy lower alkyl group, carboxy lower alkyl group, halogen, alkoxy group, acylamide group, alkylsulfonyl group, carboxy group, thiocarboxy group, mercaptocarbonyl group, nitro group or carbonyl group.

3,824,268

PERHALOCOUMALIN DERIVATIVES

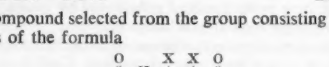
Victor Mark, Ransomville, and Leon Zengierski, North Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Oct. 12, 1966, Ser. No. 586,056, now Patent No. 3,528,995. Divided and this application Dec. 10, 1969, Ser. No. 876,223

Int. Cl. C07c *53/07*

U.S. Cl. 260—455 R **11 Claims**

A compound selected from the group consisting of compounds of the formula



wherein X is a halogen chosen from the group consisting of fluorine, chlorine, bromine, and iodine, and mixtures thereof. $(R)_nA$ is a substituent in which the following relationship exists:

If *n* is—	Z may be—
0	Bromine, iodine, fluorine.
1	Oxygen, sulfur, selenium.
2	Nitrogen, arsenic.
3	Carbon.

and wherein R is selected from the group consisting of hydrogen; alkyl groups of 1 to 18 carbon atoms in any of their isomeric forms, provided that when Z is oxygen the alkyl groups from which R may be selected contain from 6 to 18 carbon atoms; substituted alkyl groups of 1 to 18 carbon atoms wherein the substituents are selected from the group consisting of fluorine, chlorine, bromine, iodine, sulfur, oxygen, phosphorus, nitrogen, and silicon; alicyclic groups containing from 5 to 18 carbon atoms; heterocyclic groups containing from 5 to 18 carbon atoms wherein the hetero atom(s) is selected from the group consisting of oxygen, sulfur, nitrogen, phosphorous, and silicon; and aromatic and aralkyl groups containing from 6 to 18 carbon atoms.

The above described compounds have utility as fungicides, bactericides, insecticides and pesticides.

3,824,269

AMINOALKYLATION OF ALCOHOLS USING AN AZIRIDINE-SULFUR DIOXIDE COMPLEX

Donald A. Tomalia, James L. Brewbaker, and Narayanlal D. Ojha, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 26, 1970, Ser. No. 14,661

Int. Cl. C07c *137/00, 93/02*

U.S. Cl. 260—456 A **10 Claims**

Alcohols are aminoalkylated in the novel process which comprises reacting (a) an alcohol with (b) a complex of an aziridine and sulfur dioxide. As an example, methanol reacts with a complex of aziridine and sulfur dioxide at 25° C. to produce an ammonium salt of 2-methoxyethylamine as the major product. The aminoalkylated products thus produced are easily converted to the corresponding free amino compounds by treatment with base. These compounds are useful, for example, as epoxy curing agents.

3,824,270

PROCESS FOR THE MANUFACTURE OF TETRACHLOROCYANOBENZENE OR TETRABROMOCYANOBENZENE

Jost von der Crone, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Nov. 15, 1971, Ser. No. 199,003

Claims priority, application Switzerland, Nov. 13, 1970, 16,793/70

Int. Cl. C07c *121/52*

U.S. Cl. 260—456 B **2 Claims**

Process for the manufacture of 1-cyano-2,3,4,5-tetrachlorobenzene or 1-cyano-2,3,4,5 - tetrabromobenzene, characterised in that the ammonium salt of 2-cyano-3,4,5,6-tetrachlorobenzoic acid or 2 - cyano-3,4,5,6-tetrabromobenzoic acid is decarboxylated by warming in an aprotic solvent or in a mixture of such solvents.

3,824,271

3-ALKYL-3-(BENZOYL)PROPIONITRILES

George Rodger Allen, Jr., Old Tappan, N.J., and Francis Joseph McEvoy, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed July 20, 1972, Ser. No. 273,585

Int. Cl. C07c *121/76*

U.S. Cl. 260—465 D **4 Claims**

This disclosure describes compounds of the class of 3-alkyl-3-(substituted-benzoyl)propionitriles useful as intermediates for the preparation of certain long-acting hypotensive agents of the 6-(substituted-phenyl)-5-alkyl-4,5-dihydro-3(2H)-pyridazinone class.

3,824,272

INTERMEDIATES FOR THE PREPARATION OF ALKYL SUBSTITUTED RESORCINOLS

Arnold Brossi, Verona, and Antonino Focella and Sidney Teitel, Clifton, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 22, 1969, Ser. No. 793,191, now abandoned. Divided and this application Sept. 16, 1971, Ser. No. 181,258

Int. Cl. C07c *61/36, 69/71*

U.S. Cl. 260—468 J **6 Claims**

Preparation of 5-alkyl substituted resorcinols such as olivetol from aliphatic aldehydes and intermediates in this process.

3,824,273

UV ABSORBENT, LIGHT STABLE COMPOUNDS

Rudolf Kirchmayr, Binningen, Basel-Land, Hans Jakob Peterli, Fullinsdorf, Basel-Land, and Hansjorg Heller, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 565,725, July 18, 1966, now Patent No. 3,546,270. This application Aug. 31, 1970, Ser. No. 68,473

Claims priority, application Switzerland, July 23, 1965, 10,355/65

The portion of the term of the patent subsequent to Dec. 15, 1987, has been disclaimed

Int. Cl. C07c *69/76*

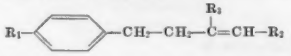
U.S. Cl. 260—473 R **6 Claims**

Certain bis-methylene malonic acid derivatives are useful as improved UV absorbers. They have slight self-color,

exhibit good fastness to light and heat. They are incorporated into light sensitive polymers.

3,824,274
ESTERS OF PHENOXYPHENYLALKENOIC ACIDS
Albrecht Franke, Ludwigshafen, Germany, and Walter Traber, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Filed May 12, 1972, Ser. No. 252,783
Claims priority, application Switzerland, May 15, 1971, 7,205/71; Apr. 6, 1972, 5,087/72
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 R **11 Claims**

Compounds of the formula



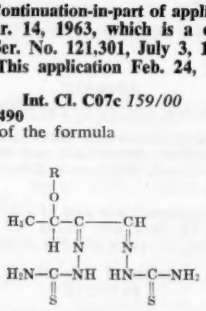
wherein R_1 represents a phenyl, phenoxy, phenylthio or cyclohexyl radical which is optionally substituted by halogen, nitro, alkyl and/or alkoxy, or a phenyl or cyclohexyl radical which is bonded via an alkylene, alkyleneoxy or alkylenethio bridge member, R_2 represents cyano, carbamoyl, an alkoxycarbonyl, alkenyloxycarbonyl, alkinyloxycarbonyl, alkylcarbamoyl or dialkylcarbamoyl radical and R_3 represents hydrogen or alkyl, their manufacture and agents for influencing the development of insects are disclosed.

3,824,275
DIRECT MONO-ESTERIFICATION OF ARYLMALONIC ACIDS
Robert V. Kasubick, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 793,530, Jan. 23, 1969. This application July 27, 1971, Ser. No. 166,560
Int. Cl. C07c *69/76*
U.S. Cl. 260—475 SC **1 Claim**

The direct mono-esterification of aryl malonic acids in the presence of thionyl chloride or thionyl bromide and an N,N-di(lower)-alkylformamide or N,N-di(lower)alkylacetamide in an ether solvent is described.

3,824,276
SUBSTITUTED-2-OXOBUTYRALDEHYDE BIS(THIOSEMICARBAZONES)
Maxton F. Murray and Harold G. Petering, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.
No Drawing. Continuation-in-part of application Ser. No. 265,060, Mar. 14, 1963, which is a continuation of application Ser. No. 121,301, July 3, 1961, both now abandoned. This application Feb. 24, 1966, Ser. No. 529,671
Int. Cl. C07c *159/00*
U.S. Cl. 260—490 **5 Claims**

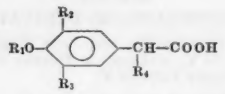
Compounds of the formula



including cuprous, cupric, ferrous, zinc cobaltous and auric chelates, alkali metal and acid addition salts. The compounds have anti-tumor, anti-fungal, and anti-parasitic activity as well as produce symptoms of Vitamin B-complex deficiencies.

3,824,277
4-ALLYLOXY-3-CHLORO-PHENYL-ACETIC ACID
Nguyen Phuc Buu-Hoi, Hue, South Vietnam, and Georges Lambelin and Claude Gillet, Brussels, Belgium, assignors to Madan AG, Chur, Switzerland
Continuation-in-part of application Ser. No. 754,972, Aug. 23, 1968, which is a continuation-in-part of application Ser. No. 695,969, Jan. 5, 1968, both now abandoned. This application May 26, 1970, Ser. No. 40,544
Claims priority, application Belgium, Sept. 27, 1974, 704,368; Aug. 1, 1968, 718,930
Int. Cl. C07c *65/00*
U.S. Cl. 260—521 A **1 Claim**

Acids of the formula



wherein:

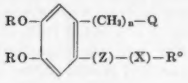
R_1 represents a linear or branched alkyl radical C_2–C_8; a linear or branched alkenyl radical C_3–C_4; an alkynyl radical C_3–C_4; a cycloalkenyl radical C_5–C_6; a benzyl radical; or a benzyl radical substituted by an alkyl radical, an alkoxy radical or a halogen;

R_2 and R_3 each represent a linear or branched alkyl radical C_1–C_3, a lower alkenyl radical C_2–C_4, a lower alkoxy radical C_1–C_4 or a halogen atom, R_2 and R_3 being identical or different, one of said R_2 and R_3 may also be hydrogen;

R_4 represents hydrogen or a linear or branched lower alkyl radical C_1–C_4, salts thereof; preparation of the above, and their use as antipyretic, anti-inflammatory, analgesic and antispasmodic agents.

3,824,278
1,6-DISUBSTITUTED PYROCATECHOL DERIVATIVES
Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed Mar. 23, 1972, Ser. No. 237,497
The portion of the term of the patent subsequent to Apr. 16, 1990, has been disclaimed
Int. Cl. C07c *65/02, 65/20*
U.S. Cl. 260—521 R **9 Claims**

Disclosed are compounds of the formula



wherein Z is $—CH_2—CH_2—$ or —CH=CH—; X is —CO— or —COHR'—; R' is hydrogen or lower alkyl; Q is $—CH_2OH$, —COR'' or —CHO; R° is alkyl of 4 to 6 carbon atoms; *n* is 4, 5 or 6; R is hydrogen or lower alkyl; R'' is hydrogen or a cation forming a pharmaceutically acceptable salt; e.g. 1-[3',4'-dimethoxy-6'-(5''-carboxypentyl)phenyl]-1-octan-3-ol sodium salt: said compounds exhibiting pharmacological activity in animals and useful, for example, as bronchodilator agents. The compound in which X is —CHOH— with Z being

$—CH_2—CH_2—$

and Q being —COOR'' or $—CH_2OH$ may be prepared, for example, by reduction of a corresponding compound in which X is —CO—. Said compounds in which X is —CO— may be produced by catalytic hydrogenation of a corresponding compound in which Z is —CH=CH— and the latter compounds in which Q is COOR'' may be produced by complete terminal oxidation of a corresponding key compound in which Q is $—CH_2OH$, e.g. 1-[3',4'-

dimethoxy-6'-(6''-hydroxyhexyl)phenyl] - 1 - octen - 3-one. The compounds in which X is —COH—alkyl— may be produced from compounds in which X is —CO— and Z is $—CH_2—CH_2—$ by Grignard procedures and the former in which Q is $—CH_2OH$ are used when forming compounds in which Q is —CHO by controlled terminal oxidation and the latter may be used to prepare compounds in which Q is —COOR'' by complete terminal oxidation. The key compounds may be prepared by reacting a trimethylchlorosilane protected 3,4-disubstituted-6-(ω-hydroxyalkyl) - benzaldehyde with a dialkyl-2-oxoalkyl phosphorane in the presence of a base.

3,824,279
PROCESS FOR PREPARING SALTS OF ETHER POLYCARBOXYLIC ACID
Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 152,457, June 11, 1971. This application Nov. 10, 1972, Ser. No. 305,626
Int. Cl. C07c *59/22*
U.S. Cl. 260—535 P **17 Claims**

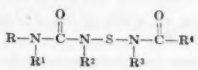
A method for preparing salts of ether polycarboxylic acids, particularly salts of carboxymethyloxysuccinic acid, by reacting in an aqueous alkaline medium an aldehyde and an alkaline earth metal or alkali metal cyanide and an alkali metal or alkaline earth metal salt of an unsaturated polycarboxylic acid at temperatures from about 25° C. to about 200° C.

3,824,280
PRODUCTION OF N-(1-ALKENYL)-CARBAMOYL COMPOUNDS
Hans Kiefer, Wachenheim, Wolfgang Rohr, Mannheim, and Herbert Naarmaan, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Aug. 18, 1971, Ser. No. 172,934
Claims priority, application Germany, Aug. 27, 1970, P 20 42 497.1
Int. Cl. C07c *51/58*
U.S. Cl. 260—544 C **2 Claims**

The production of N-(1-alkenyl)-carbamoyl compounds by reaction of a Schiff base with an acid chloride with or without elimination of hydrogen chloride from the end product, and the new N-(1-alkenyl)-carbamoyl and N-(1,3-dialkenyl)-carbamoyl compounds themselves. The new N-(1-alkenyl)-carbamoyl and N-(1,3-dialkenyl)-carbamoyl compounds which can be prepared by the process of the invention are valuable starting materials for the production of surface coating intermediates, plastics, paints and plant protection agents.

3,824,281
1-CARBOXAMIDOTHIO-3-ARYL UREAS
Melancthon S. Brown, deceased, late of Berkeley, Calif., by Gustave K. Kohn, administrator, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Nov. 9, 1970, Ser. No. 88,229
Int. Cl. C07c *155/02*
U.S. Cl. 260—545 R **13 Claims**

Compounds of the formula

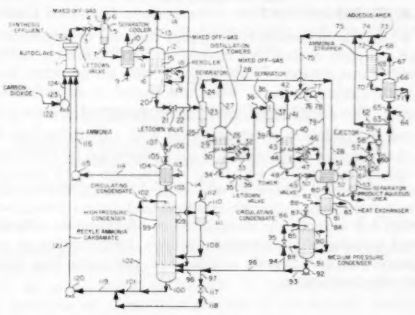


wherein R is phenyl substituted with 0 to 4 halogens, nitro groups, lower alkyl or lower alkoxy groups; R^1 and R^2 are hydrogen or lower alkyl; R^3 is alkyl of 1 to 10 carbon atoms optionally substituted with halogen atoms or cycloalkyl of 3 to 10 carbon atoms optionally substituted with halogen atoms; R^4 is hydrogen, alkyl of 1 to 10 carbon atoms optionally substituted with halogen atoms, cycloalkyl of 3 to 10 carbon atoms optionally substituted with halogen atoms, with the proviso that R^3 and R^4 may be joined to form a linear alkylene radical of 3 to 5 carbon atoms which is bound to the carbonyl and nitrogen to form a ring. The compounds are herbicidal.

3,824,282
PRODUCTION OF SELENIUM COMPOUNDS
Douglas James Fry and Patrick Joseph Keogh, Ilford, England, assignors to Ilford Limited, Essex, England
No Drawing. Filed Sept. 22, 1971, Ser. No. 182,837
Claims priority, application Great Britain, Sept. 30, 1970, 46,528/70
Int. Cl. C07c *163/00*
U.S. Cl. 260—551 R **5 Claims**

A process for the production of a cyclohexanoneselenosemicarbazone by reacting an alkali-metal selenocyanate with a hydrazine and a cyclohexanone is disclosed.

3,824,283
UREA SYNTHESIS PROCESS
Shunichi Harada, Rego Park, and Maxim Karafian, Cold Spring Harbor, N.Y., assignors to Chemical Construction Corporation, New York, N.Y.
Filed Nov. 2, 1970, Ser. No. 85,952
Int. Cl. C07c *127/00*
U.S. Cl. 260—555 A **13 Claims**



A urea synthesis process in which the pressure of the effluent melt from the urea synthesis autoclave is reduced to an intermediate level of 65 to 135 kg./sq. cm., and the off-gas evolved at this relatively high pressure is separated from the liquid effluent, which is then distilled to produce further high pressure off-gas. The off-gas streams of low water vapor content are combined and condensed, preferably by heat exchange with water which is vaporized to produce steam, and the process condensate is recycled to urea synthesis as recycle ammonium carbamate solution which is reacted with feed streams of ammonia and carbon dioxide at high pressure to synthesize urea and form the effluent melt. The residual liquid phase after high pressure distillation is passed at reduced pressure to further off-gas separation and distillation, and low pressure off-gas streams are combined and condensed to a liquid condensate which is pressurized and added to the combined high pressure off-gas stream or to the high pressure recycle ammonium carbamate solution.

3,824,284

BUTYRIC ACID DERIVATIVES

Hans Rudolph, Krefeld-Bockum, Hans-Georg Heine and Karl Fuhr, Krefeld, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 20, 1969, Ser. No. 867,939

Claims priority, application Germany, Nov. 6, 1968, P 18 07 301.3

Int. Cl. C07c *103/22*

U.S. Cl. 260—559 R **7 Claims**

The invention relates to γ-hydroxy-γ-phenyl-γ-benzoylbutyric acids, the esters and amides thereof, which are useful photosensitisers for the photopolymerisation of polymerisable compounds or compound mixtures including mixtures of unsaturated polyesters and copolymerisable monomeric compounds.

3,824,285

4-OXO-4-DEDIMETHYLAMINOTETRACYCLINE-4,6-HEMIKETALS

Robert K. Blackwood, Gales Ferry, and Charles R. Stephens, Jr., East Lyme, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Application Sept. 13, 1967, Ser. No. 667,357, now Patent No. 3,622,627, which is a continuation-in-part of application Ser. No. 360,435, Apr. 16, 1964, which in turn is a continuation-in-part of application Ser. No. 247,874, Dec. 28, 1962, both now abandoned. Divided and this application Feb. 9, 1971, Ser. No. 114,038

Int. Cl. C07c *103/19*

U.S. Cl. 260—559 AT **5 Claims**

4-Dedimethylaminotetracyclines and the corresponding 5a,6-anhydro derivatives having an oxo, hydroxy, substituted imino, amino or substituted amino group other than dimethylamino at the C-4-position useful as antimicrobial agents. The 4-oxo-4-dedimethylaminotetracyclines are prepared by oxidation of tetracyclines with a hydrocarbon dicarboxylic acid haloimide and then converted by reduction to the corresponding 4-hydroxy compounds or by reaction with a primary amine to 4-substituted imino derivatives. The latter compounds are reduced to 4-amino derivatives which are reductively methylated or alkylated to 4-substituted-4-dedimethylaminotetracyclines. Dehydration of the tetracycline compounds affords the corresponding 5a,6-anhydro compounds.

3,824,286

PREPARATION OF POLYACETYLALKYLENE DIAMINES

Jan Christiaan Grimmelikhuysen, Rotterdam, and Arnold Schroeder, Deventer, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed June 28, 1971, Ser. No. 157,687

Claims priority, application Great Britain, July 7, 1970, 32,850/70

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 R **12 Claims**

An improved process for the preparation of polyacetylalkylene diamines in good yields is provided, which process comprises reacting a compound having the general formula:

$$H_2N—R—NH_2$$

in which R represents an alkylene or substituted alkylene group having 2 to 6 carbon atoms in a straight chain connecting both nitrogen atoms, with acetic acid to obtain the diacetyl compound. The product thus obtained is directly suitable for further acetylation, preferably using acetic anhydride as the acetylating agent.

3,824,287

PRODUCTION OF N,N,N',N'-TETRAACETYL-ETHYLENEDIAMINE

Guenther Matthias, Ludwigshafen, Christoph Palm, Mannheim, and Gerhard Schulz, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 20, 1971, Ser. No. 190,818

Claims priority, application Germany, Oct. 28, 1970, P 20 52 822.7

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 R **5 Claims**

Production of N,N,N',N'-tetraacetylethylenediamine by reaction of diacetylethylenediamine with acetic anhydride and ketene. The products are starting materials for the production of textile auxiliaries, cleaning agents and pesticides.

3,824,288

SUBSTITUTED HYDRAZINE DERIVATIVES AND PROCESS FOR THE MANUFACTURE THEREOF

Werner Bollag, Basel, Hugo Gutmann, Reinach, Balthasar Hegedus, Binningen, Ado Kaiser, Lausen, Basel-Land, Albert Langemann, Binningen, Marcel Muller, Frenkendorf, and Paul Zeller, Allschwil, Basel-Land, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application June 4, 1970, Ser. No. 43,572, now Patent No. 3,711,543, which is a division of application Ser. No. 571,690, Aug. 11, 1966, now Patent No. 3,534,100, dated Oct. 13, 1970, which in turn is a division of abandoned application Ser. No. 200,059, June 5, 1962. Divided and this application Nov. 21, 1972, Ser. No. 308,627

Claims priority, application Switzerland, June 9, 1961, 6,734/61

Int. Cl. C07c *129/08*

U.S. Cl. 260—565 **2 Claims**

Benzene-ring substituted (2-methylhydrazino)-methylbenzene compounds and intermediates therefor are described. The former compounds are useful as cytostatic agents and, particularly, inhibit the growth of transplantable tumors in both mice and rats. Thus, they are active, for example, against Walker tumors, Ehrlich carcinoma and Ehrlich ascites carcinoma.

3,824,289

METHOD FOR THE MANUFACTURE OF TETRAKIS (DIMETHYLAMINO) ETHYLENE

Thomas Liggett, Indian Head, Md., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,560

Int. Cl. C07c *85/00, 85/16*

U.S. Cl. 260—583 P **13 Claims**

An improved method for the manufacture of tetrakis (dimethylamino) ethylene (TMAE), which comprises the step of reacting chlorotrifluoroethylene (CTFE) with dimethylamine (DMA) wherein the reaction is performed by the under surface addition of CTFE in an excess of

DMA and wherein condensers may be used to help control the dissipation of the heat of reaction. The invention also contemplates a new and useful method for separating and recovering excess DMA.

3,824,290

ALIPHATIC HYDROCARBON 2,4-DIENAMINES

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 187,898, Oct. 8, 1971, now Patent No. 3,752,843, which is a continuation-in-part of abandoned application Ser. No. 111,673, Feb. 1, 1971. This application Dec. 9, 1971, Ser. No. 206,519

Int. Cl. C07c *87/24*

U.S. Cl. 260—583 H **9 Claims**

Aliphatic hydrocarbon 2,4-diene amines, intermediates therefor, syntheses thereof and their use for the control of insects.

3,824,291

4-(3-HYDROXY-1,5-DIMETHYLHEX-1-YL)-1-CYCLOHEXENE-1-CARBOXALDEHYDE

Beverly Ann Pawson, Montclair, and Gabriel Saucy, Essex Fells, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Mar. 3, 1969, Ser. No. 803,964, now Patent No. 3,641,156, which is a continuation-in-part of abandoned application Ser. No. 725,208, Apr. 29, 1968. Divided and this application Feb. 25, 1971, Ser. No. 118,971

Int. Cl. C07c *47/42, 47/46*

U.S. Cl. 260—598 **3 Claims**

This invention is directed to a method of synthesizing Juvabione and novel derivatives thereof which are useful in killing and preventing proliferation of insects by upsetting their hormone balance including intermediates in this process.

3,824,292

BROMINATION PROCESS

John A. Kirby, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Oct. 16, 1972, Ser. No. 298,054

Int. Cl. C07c *47/14, 47/20*

U.S. Cl. 260—602 **5 Claims**

A process for brominating a 1,1,3,3-tetraloweralkoxypropane, which process yields a mixed reaction product wherein a 2-bromo-3-loweralkoxyacrolein is the major constituent.

3,824,293

BISTHIOETHERS

George L. Brode, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Nov. 7, 1972, Ser. No. 304,542

Int. Cl. C07c *147/06*

U.S. Cl. 260—607 A **10 Claims**

A new class of bisthioethers has been prepared by condensing an alkali metal salt of an hydroxyalkyl or hydroxyaryl mercaptan with reactive aromatic halogen compounds such as hexachlorobenzene, hexachlorobenzene-bisphenol adducts, multichlorinated polyphenyls, and dichlorodiphenyl sulfone. Similar bisthioethers can be prepared by substituting salts of amino or carbalkoxy mercaptans for the hydroxy mercaptan.

3,824,294

COSMETIC EMULSIFIERS

Gregoire Kalopissis, Paris, and Guy Vanlerberghe, Montjay-la-Tour, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

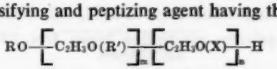
No Drawing. Continuation-in-part of abandoned application Ser. No. 780,299, Nov. 29, 1968, which is a continuation-in-part of application Ser. No. 677,047, Oct. 23, 1967, now Patent No. 3,595,924. This application Feb. 26, 1971, Ser. No. 119,363

The portion of the term of the patent subsequent to May 11, 1988, has been disclaimed

Int. Cl. C07c *43/18*

U.S. Cl. 260—611 B **3 Claims**

An emulsifying and peptizing agent having the formula

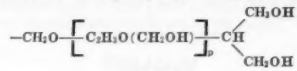


wherein

R is a lipophilic hydrocarbon residue of a member selected from the group consisting of alcohols, sterols and their mixtures derived from a member selected from the group consisting of (a) hydrogenated lanolin, and (b) cyclic fatty acids,

R′ is selected from the group consisting of methyl and ethyl,

X is selected from the group consisting of —CH_2OH,



and

m has a statistical average value between 1–10 inclusive,

n has a statistical average value between 1–5 inclusive,

p is an integer between 0–10 inclusive and the product $n(p+2)$ lies between 2–12 inclusive.

3,824,295

PREPARATION OF ETHERS

Ronnie D. Gordon, Richardson, Tex., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,771

Int. Cl. C07c *41/00*

U.S. Cl. 260—614 R **5 Claims**

Symmetrical ethers are prepared by reacting an organic compound containing a halogen or alkyl sulfate group with an alkali metal hydroxide, in aqueous solution, in the presence of a catalytic amount of an organic quaternary salt and recovering from the reaction mixture the desired symmetrical ether. Typical examples of materials used are: 3-chloropropen, sodium hydroxide and trioctyl methyl ammonium chloride. The ethers are useful as solvents.

3,824,296

PROCESS FOR THE MANUFACTURE OF 1,1,2,2-TETRAHYDRO-PERFLUORO-ALKANOLS

Erich Schuierer and Klaus Ulm, Burghausen, Siegfried Rebsdat, Altotting, and Ignaz Wimmer, Unterau (Neuotting Post Office), Germany, assignors to Farbwerke Hoechst AG, Frankfurt am Main, Germany

No Drawing. Filed June 7, 1971, Ser. No. 150,770

Claims priority, application Germany, June 10, 1970, P 20 28 459.7

Int. Cl. C07c *31/34*

U.S. Cl. 260—633 **10 Claims**

2-Perfluoroalkyl ethanols are obtained by reacting 2-perfluoro-alkyl ethyliodides with at least the two-fold molar

amount of nitric acid of about 70 to 98% strength and hydrogenating the intermediates, which are the nitrates of the desired ethanols. The products are useful as starting materials for the production of hydrophobic and oleophobic textile finishing agents, e.g. the polymer acrylates and methacrylates of said 2-perfluoroalkyl-ethanols.

3,824,297

METHOD FOR MANUFACTURING A MOLDED ARTICLE OF EXPANDED VERMICULITE

Takeo Wada, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Dec. 9, 1971, Ser. No. 206,495

Claims priority, application Japan, Dec. 29, 1970, 46/128,948

The portion of the term of the patent subsequent to Sept. 11, 1990, has been disclaimed

Int. Cl. C04b *2/02, 31/26*

U.S. Cl. 264—25 **5 Claims**

A new expanded vermiculite molded article is produced by a process which comprises subjecting vermiculite to heating or irradiation with electromagnetic waves in the presence of urea or thiourea and, during or after this process, allowing the vermiculite to contact with formaldehyde.

3,824,298

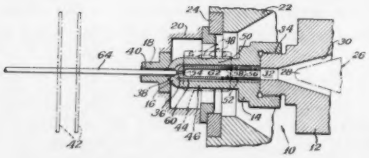
METHOD FOR REMELTING SPRUE MATERIAL

Kenneth E. Sherer, Richmond, Ind., assignor to National Automatic Tool Company, Inc.

Original application June 1, 1971, Ser. No. 148,630. Divided and this application Oct. 30, 1972, Ser. No. 301,974

Int. Cl. B29f *1/05*

U.S. Cl. 264—161 **3 Claims**



A method for remelting plastic sprue material remaining adjacent a mold in an injection molding machine after an injection molding cycle of operation. Pressure is applied in a conventional manner to heated plastic for passage through a heated nozzle member in an injection molding machine. The nozzle contains a shuttle member which is moved to an injection position as the melted heated plastic is passed through the nozzle and the shuttle member, through a sprue line and then to the mold cavity. After the plastic solidifies in the mold cavity, a sprue removal pin is passed through the sprue line so as to remove the waste material or sprue material from the sprue line. This movement of the sprue removal pin moves the sprue back towards the nozzle and the sprue moves the shuttle member to a retraction position. The sprue then passes through a second path of travel which is past the heated portion of the nozzle for reheating and remelting the sprue material for later use thereof in an injection molding cycle.

3,824,299

SIMPLIFIED PROCESS FOR MANUFACTURING CELLULOSE ACETATE REVERSE OSMOSIS MEMBRANES

Barry M. Brown and Elbert L. Ray, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,811

The portion of the term of the patent subsequent to Feb. 12, 1991, has been disclaimed

Int. Cl. B29d *27/03*

U.S. Cl. 264—41 **14 Claims**

Cellulose acetate "reverse osmosis" membranes having excellent "flux" and "rejection" properties can be manufactured via a simplified process if (a) formic acid constitutes the organic fraction of the solvent portion of the formulation from which the membrane is manufactured, and (b) a very hot (>100° F.) initial aqueous quench step is utilized in the manufacturing process.

3,824,300

METHOD FOR CONTINUOUSLY PRODUCING TUBULAR BODIES OF FOAMED MATERIAL

Hermann-Josef Raffenberg, Ludinghausen, Germany, assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Application Feb. 23, 1971, Ser. No. 118,127, now Patent No. 3,730,660, which is a continuation-in-part of abandoned application Ser. No. 760,280, Sept. 17, 1968. Divided and this application Dec. 25, 1972, Ser. No. 318,031

Claims priority, application Germany, Apr. 26, 1968, P 17 78 407.5

Int. Cl. B29c *27/16, 27/28*

U.S. Cl. 264—47 **6 Claims**

A method for continuously making a tubular polyurethane foam insulation adapted to be installed about a pipe or the like by convolutely winding a continuous web about a mandrel disposed in a stationary mold, the free end of the web extending out through a slot in the mold wall, convolutely winding a second web about the first web having its free end also extend out through the same slot, placing a foamable polyurethane mixture between the two webs while pulling the exposed portions of the webs longitudinally and thereby moving the two radially spaced webs through the mold while the foamable reaction mixture forms longitudinally split tubular bodies having the first web as a liner and the second web as a cover.

ERRATUM

For Class 423—139 see:
Patent No. 3,824,161

3,824,301

CADMIUM SULFIDE INFRARED TRANSMITTING OPTICAL ELEMENTS

Edward Carnall, Jr., and William F. Parsons, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

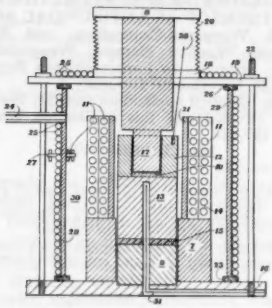
Continuation of abandoned application Ser. No. 141,426, Sept. 28, 1961. This application Nov. 30, 1970, Ser. No. 93,898

Int. Cl. C01g *11/02, 1/12*

U.S. Cl. 423—561 **2 Claims**

An article which transmits radiation in the infrared region of the electromagnetic spectra consisting of par-

ticles of cadmium sulfide joined by hot pressing powdered particles, said article being a unitary polycrystal-



line solid having substantially homogeneous crystalline areas and a density of at least 99% of theoretical density.

3,824,302

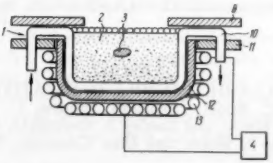
METHOD OF GROWING MONOCRYSTALS OF RUBY FROM A MOLTEN CHARGE

Vladimir Ilich Alexandrov, ulitsa Krupskoi 4, korpus 3, kv. 48; Vyacheslav Vasilievich Osiko, ulitsa Vavilova 48, kv. 63; and Vladimir Mikhailovich Tatarintsev, Leninsky Prospekt 45, kv. 112, all of Moscow, U.S.S.R.

Filed Jan. 28, 1971, Ser. No. 109,366

Int. Cl. B01j *17/18;* **C04b** *35/10;* **H05b** *5/00*

U.S. Cl. 423—625 **3 Claims**



The invention relates to methods of obtaining monocrystals of ruby.

The invention resides in a method of growing monocrystals of ruby by drawing a monocrystal of ruby from a molten charge by means of an initiation piece, comprising the steps of placing the charge into a container vessel, heating this charge for melting same by using the energy of a high-frequency electric field, in which method, in accordance with the invention, the process of growing a monocrystal of ruby is carried out within an oxidizing gas atmosphere inside a positively cooled container, with an amount of aluminum metal being initially placed into the charge, this amount of aluminum metal being subsequently molten and superheated under the action of the high-frequency electric field, in order to effect melting of the charge and to transmit the energy of the said field directly to the molten charge, bypassing the container.

3,824,303

COLLAPSIBLE FOAM PRE-ELECTRIC SHAVE LOTION CONTAINING DIESTER LUBRICANTS

Monroe Lanzet, Pine Brook, and Eugene Mavroudis, Bogota, N.J., assignors to Yardley of London, Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 297,228, July 24, 1963. This application May 15, 1969, Ser. No. 825,045

Int. Cl. A61k *1/14*

U.S. Cl. 424—47 **23 Claims**

The invention relates to lubricant compositions to facilitate shaving with electric razors, which compositions contain certain diester lubricants and surfactants. Methods of using the compositions are also disclosed.

3,824,304

HAIR CONDITIONER

Antonio F. Villanueva, 69 Naguilian Road, Baguio City, Philippines

No Drawing. Filed June 5, 1972, Ser. No. 259,454

Int. Cl. A61k *7/06*

U.S. Cl. 424—74 **1 Claim**

A hair conditioner comprising of coconut oil, oil of capsicum, *Citrus aurantium* juice and a non-metallic halogen combined to provide a liquid that cleans the hair and gives a feeling of comfort and freshness to the scalp.

ERRATUM

For Class 424—78 see:
Patent No. 3,824,218

3,824,305

ANTIBIOTIC A–287 AND PROCESS FOR PRODUCTION THEREOF

Robert L. Hamill, New Ross, and W. Max Stark, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jan. 22, 1973, Ser. No. 325,264

Int. Cl. A61k *21/00*

U.S. Cl. 424—118 **5 Claims**

Antibiotic mixture A–287, comprising microbiologically active, structurally related factors A and B, produced by cultivation of *Actinoplanes utahensis* NRRL 5614 under submerged aerobic conditions, is isolated by extraction of the broth. The individual factors are separated and isolated by chromatography and countercurrent distribution. The A–287 mixture and the individual factors have antibacterial, antifungal, parasiticidal, and growth-promoting activity.

3,824,306

INSECTICIDAL AND FUNGICIDAL COMPOSITION

Hiroshi Tsuchiya, Ashiya, Kunio Mukai, Nishinomiya, Akio Kimura, Ikeda, Suminori Kawano, Minoo, Keimei Fujimoto, Kobe, Toshiaki Ozaki, Sigeo Yamamoto, and Yositosi Okuno, Toyonaka, Katsutoshi Tanaka, Takarazuka, and Tadashi Ooishi and Hisami Takeda, Minoo, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Original application Nov. 3, 1969, Ser. No. 873,503, now Patent No. 3,725,514. Divided and this application Jan. 15, 1973, Ser. No. 323,714

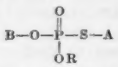
Claims priority, application Japan, Nov. 12, 1968, 43/82,963; Nov. 14, 1968, 43/83,366

Int. Cl. A01n *9/36*

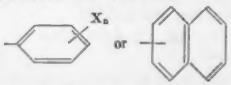
U.S. Cl. 424—225 **6 Claims**

An insecticidal or fungicidal composition which has strongly insecticidal or fungicidal activity and low toxicity

to mammals, containing an organic phosphorothiolate having the formula,



wherein R is lower alkyl; A is alkyl, haloalkyl or phenylalkyl; B is a group of the formula,



X being phenyl, phenylalkyl, or halogen, provided that at least one X is a group other than halogen atom, and *n* being an integer of 1–5 is disclosed.

3,824,307

METHOD OF CONTROLLING BACTERIA, YEAST AND FUNGAL SPECIES WITH PHENYLBISMUTH BIS(2-PYRIDINETHIOL-1-OXIDE)

John Downing Curry, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Application Jan. 17, 1972, Ser. No. 218,584, now Patent No. 3,753,990, which is a continuation-in-part of abandoned application Ser. No. 98,086, Dec. 14, 1970. Divided and this application Mar. 30, 1973, Ser. No. 346,395

Claims priority, application Netherlands, Apr. 4, 1972, 7204437; France, Apr. 7, 1972, 7212388; Germany, Apr. 7, 1972, P 22 16 725; Sweden, Apr. 10, 1972, 4,611/72

Int. Cl. A61k *27/00;* **A61l** *13/00;* **A01n** *9/22*

U.S. Cl. 424—245 **3 Claims**

A method of controlling a broad spectrum of bacteria, yeast and fungal species by contacting said species with an effective amount of phenylbismuth bis(2-pyridinethiol 1-oxide).

3,824,308

THIAZOLIUM SALT COMPOSITION AND METHOD FOR TREATMENT OF POULTRY COCCIDIOSIS THEREWITH

Akira Takamizawa, Ibaraki-shi, Osaka, and Kentaro Hirai, Kyoto-shi, Kyoto, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

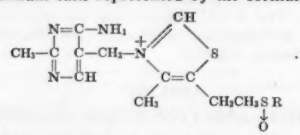
No Drawing. Original application Oct. 12, 1970, Ser. No. 80,163, now Patent No. 3,734,913. Divided and this application Aug. 11, 1972, Ser. No. 279,809

Claims priority, application Japan, Oct. 24, 1969, 44/85,578; Dec. 18, 1969, 44/101,829

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **3 Claims**

Thiazolium salts represented by the formula:



wherein R represents a lower alkyl group, an aryl group, or an ar(lower)alkyl group, and X represents an acid residue or its acid addition salt, being useful as poultry anticoccidial agents, are prepared by two routes.

3,824,309

METHODS OF COMBATTING BACTERIA AND FUNGI USING BICYCLIC OXAZOLIDINES

Harald Schnegelberger, Leichlingen, Rhineland, and Horst Bellinger, Dusseldorf, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Mar. 30, 1973, Ser. No. 346,312

Claims priority, application Germany, Apr. 15, 1972, P 22 18 348.8

Int. Cl. A01n *9/22, 9/28*

U.S. Cl. 424—272 **8 Claims**

Bicyclic oxazolidines are useful as antimicrobial agents in cosmetic and pharmaceutical preparations to prevent the growth of microorganisms.

3,824,310

BIS-IMIDAZOLYL-BISPHENYLMETHANE AND SALTS THEREOF AS ANTIFUNGAL AGENTS

Erik Regel, Wuppertal-Cronenberg, and Karl Heinz Buchel and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Oct. 31, 1969, Ser. No. 873,098. Divided and this application Oct. 8, 1971, Ser. No. 187,814

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **65 Claims**

Bis-imidazolyl-bisphenylmethane and pharmaceutically acceptable non-toxic salts thereof are useful as antimycotics especially against dermatomycosis caused by *Trichophyton* and *Microsporium* species and also against yeast infections of the skin and internal organs.

3,824,311

METHOD OF TREATMENT

Lewis R. Mandel, Edison, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application Feb. 4, 1972, Ser. No. 223,721, now Patent No. 3,749,781, dated July 31, 1973, which is a continuation-in-part of abandoned application Ser. No. 80,176, Oct. 12, 1970. Divided and this application Apr. 20, 1973, Ser. No. 353,043

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **1 Claim**

A composition for and a method of inhibiting indoleamine-N-methyl transferase comprising the administration to a host of a therapeutically effective amount of a compound selected from the group consisting of 2,3-dimercapto - quinoxaline, 2,3,4,6,7,8-hexahydropyrrolo-[1, 2-a]pyrimidine, mono-lower alkyl derivatives of 2,3,4,6, 7,8 - hexahydropyrrolo - [1,2-a]pyrimidine, quinuclidine, 1 - pyrrolidinecarboxamidine, 3,4,6,7,8,9-hexahydro - 2H-pyrido[1,2 - a]pyrimidine, 2,3,4,6,7,8,9,10 - octahydropyrimido[1,2 - a]azepine, 1-methyl-2-*trans*-styryl - 1,4,5,6-tetrahydropyrimidine, (2,4 - dihydroxy-5-pyrimidyl) - disulfide, 2,3-dimethoxy-5-methyl - 6 - bromobenzoquinone and the pharmaceutically acceptable salts thereof.

3,824,312

1,2,4-4H-TRIAZOLE DERIVATIVES

Michael C. Seidel, Levittown, William C. von Meyer, Willow Grove, and Stanley A. Greenfield, Ambler, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Application Aug. 26, 1970, Ser. No. 67,198, now abandoned, which is a continuation-in-part of application Ser. No. 847,481, July 3, 1969, now Patent No. 3,701,784, which in turn is a continuation-in-part of application Ser. No. 757,490, Sept. 4, 1968, now Patent No. 3,769,411. Divided and this application Oct. 16, 1972, Ser. No. 297,865

Int. Cl. A01n *9/00, 17/00*

U.S. Cl. 424—269 **10 Claims**

Fungicidal compositions containing as the active ingredient 1,2,4-4H-triazoles of the formula

or a tautomeric form thereof. These fungicides are particularly useful for the control of rusts. Certain of these compounds are systemic in action, giving excellent control of cereal rusts, notably wheat rust, and are particularly effective as seed treatments.

3,824,313
TOPICAL OPHTHALMIC COMPOSITION AND METHODS OF USE

John R. Smythies, Edinburgh, Scotland, assignor to Nelson Research & Development Company, Irvine, Calif.

No Drawing. Filed Mar. 16, 1973, Ser. No. 341,732
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **9 Claims**

A therapeutic composition comprising a topically administrable ophthalmic pharmaceutical carrier and Oxotremorine or its pharmaceutically acceptable acid addition salts. The foregoing composition temporarily alleviates the symptoms of glaucoma when topically administered to the eye.

3,824,314
ANTI-INFLAMMATORY PREPARATIONS

Bernard Lacoume, Eragny-sur-Epte, France, assignor to Akzona Inc., Asheville, N.C.

No Drawing. Continuation-in-part of abandoned application Ser. No. 169,803, Aug. 6, 1971. This application May 30, 1972, Ser. No. 257,542
Claims priority, application Netherlands, Aug. 20, 1970, 7012303
Int. Cl. A61k *27/00*
U.S. Cl. 424—274 **4 Claims**

It was found that 1,2,3,4-tetrahydro-6-methoxy-carbazole-2-carboxylic acid and salts, esters and amides thereof have a very good anti-inflammatory activity, comparable with the known highly active anti-inflammatory substances. Surprisingly, however, these compounds do not induce any ulcerogenic activity, so that they can be administered in much higher dosages. It was further found that the said compounds have a more prolonged activity in comparison with phenylbutazone, especially on parenteral administration.

3,824,315
METHOD OF TREATMENT

Lewis R. Mandel, 27 Merker Drive, Edison, N.J. 08817

No Drawing. Application Feb. 4, 1972, Ser. No. 223,721, now Patent No. 3,749,781, which is a continuation-in-part of abandoned application Ser. No. 80,176, Oct. 12, 1970. Divided and this application Apr. 20, 1973, Ser. No. 353,042
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 **1 Claim**

A composition for and a method of inhibiting indoleamine-N-methyl transferase comprising the administration to a host of a therapeutically effective amount of a compound selected from the group consisting of 2,3-dimercaptoquinoxaline, 2,3,4,6,7,8 - hexahydropyrrolo[1,2-a]pyrimidine, mono-lower alkyl derivatives of 2,3,4,6,7,8-hexahydropyrrolo-[1,2-a]pyrimidine, quinuclidine, 1-pyrrolidinecarboxamidine, 3,4,6,7,8,9 - hexahydro-2H-pyrido-[1,2-a]pyrimidine, 2,3,4,6,7,8,9,10 - octahydropyrimido-[1,2-a]azepine, 1 - methyl-2-*trans*-styryl-1,4,5,6-tetrahydropyrimidine, (2,4-dihydroxy - 5 - pyrimidyl)-disulfide, 2,3-dimethoxy-5-methyl - 6 - bromobenzoquinone and the pharmaceutically acceptable salts thereof.

3,824,316
COMPOSITIONS AND THEIR USE AS SLIME CONTROL AGENTS

Bernard F. Shema, Glenside, Robert H. Brink, Jr., Doylestown, and Paul Swered, Philadelphia, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,555
Int. Cl. A01n *9/02*
U.S. Cl. 424—275 **22 Claims**

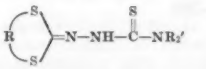
The present invention relates to certain processes and compositions useful for inhibiting and/or controlling the growth of slime in water and, in particular, water employed for industrial purposes. Water employed in the manufacture of pulp paper and water employed in cooling water systems, as well as other industrial waters, provide environments which are conducive to slime formation. The novel compositions of the present invention are mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae, which produce slime in aqueous systems. The slime, of course, is objectionable from an operational and/or an aesthetic point of view. Specifically, the invention is directed to and the use of compositions comprising a combination of 3,3,4,4 - tetrachlorotetrahydrothiophene - 1,1 - dioxide and organo - bromine compounds (or mixtures thereof). The inventive compositions inhibit the growth of slime in water, or more specifically, possess biocidal activity against bacteria, fungi and/or algae. The organo-bromine compounds contemplated for use in accordance with the present invention may be exemplified by: bis - 1,4 - bromoacetoxy - 2 - butene; alpha-bromo-p-methylacetophenone and beta-bromo-beta-nitrostyrene.

3,824,317
THIOSEMICARBAZONE FUNGICIDES

Roger Williams Addor, Pennington, and Glentworth Lamb, Trenton, N.J., assignors to American Cyanamid Company, Stamford, Conn.

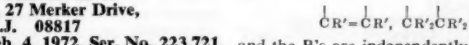
No Drawing. Original application Feb. 17, 1972, Ser. No. 227,287, now Patent No. 3,761,492, dated Sept. 25, 1973. Divided and this application Apr. 13, 1973, Ser. No. 351,109
Int. Cl. A01n *9/12, 9/20*
U.S. Cl. 424—277 **7 Claims**

The present invention relates to compounds of the formula:



I

wherein R is a member selected from the group consisting of



and the R's are independently hydrogen or lower alkyl of C_1–C_4. It further relates to controlling fungi and protecting crops from attack by fungus organisms with the above compound.

3,824,318
COMPOSITION AND METHOD FOR CONTROLLING *AEROBACTER AEROGENES*

Bernard F. Shema, Glenside, Robert H. Brink, Jr., Doylestown, Paul Swered, Philadelphia, and Roger L. Justice, Cornwells Heights, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,387
Int. Cl. A01n *9/02*
U.S. Cl. 424—277 **10 Claims**

The present invention relates to certain processes and compositions useful for inhibiting and/or controlling the growth of slime in water and, in particular, water employed for industrial purposes. Water employed in the manufacture of pulp paper and water employed in cooling water systems, as well as other industrial waters, provide environments which are conducive to slime formation. The novel compositions of the present invention are mixtures which show unexpected synergistic activity against microorganisms, including bacteria, fungi and algae which produce slime in aqueous systems. The slime, of course, is objectionable from an operational and/or an aesthetic point of view. Specifically, the invention is directed to and the use of compositions comprising a combination of 5-chloro-4-phenyl-1,2-dithiole-3-one or derivatives thereof and sorbitan mono oleate or derivatives thereof. The inventive compositions inhibit the growth of slime in water, or more specifically, possess biocidal activity against bacteria, fungi and/or algae. The deriva-

tives contemplated for use in accordance with the present invention are those which possess the capacity to kill or inhibit the growth of slime-forming microorganisms such as bacteria, fungi and algae.

3,824,319

ARTHROPOD MATURATION INHIBITION EMPLOYING CERTAIN EPOXY COMPOUNDS

Meyer Schwarz, Kensington, Philip E. Sonnet, Bowie, and Nobel Wakabayashi, New Carrollton, Md., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Jan. 7, 1971, Ser. No. 104,781

Int. Cl. A01n *9/28*

U.S. Cl. 424—278 **10 Claims**

A number of terpenoid compounds and their epoxides were synthesized and found to prevent insect maturation when applied to insects in an immature stage of growth.

3,824,320

SUBSTITUTED O-CARBAMYLHYDROXAMATE INSECTICIDES

James B. Buchanan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Apr. 2, 1970, Ser. No. 32,410, now Patent No. 3,693,633, which is a continuation-in-part of application Ser. No. 670,494, Aug. 31, 1967, now Patent No. 3,576,834, which is a continuation-in-part of application Ser. No. 602,134, Dec. 16, 1966, which in turn is a continuation-in-part of application Ser. No. 361,277, Apr. 20, 1964, both now abandoned. Divided and this application Sept. 9, 1971, Ser. No. 179,236

Int. Cl. A01n *9/20*

U.S. Cl. 424—298 **10 Claims**

Substituted O-carbamylhydroxamates such as methyl O-(methylcarbamyl)thiolacetohydroxamate are useful in controlling insects, other arthopod pests and pestiferous mollusks.

3,824,321

SELECTED MERCAPTOPYRAZINES AS FLAVORING AGENTS

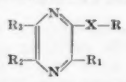
Thomas H. Parliment, Valley Cottage, Martin F. Epstein, Pearl River, William P. Clinton, Monsey, Richard Scarpelling, Ramsey, and Robert J. Soakup, New York, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Original application Aug. 29, 1969, Ser. No. 854,306, now Patent No. 3,767,425, dated Oct. 23, 1973. Divided and this application Aug. 7, 1972, Ser. No. 278,691

Int. Cl. A23l *1/26*

U.S. Cl. 426—65 **17 Claims**

Enhancement of coffee flavored foodstuffs is achieved by the addition of a small but effective amount of one or more compounds corresponding to the general formula



wherein X is oxygen or sulfur, R is a lower alkyl, preferably having one to three carbon atoms, and R_1, R_2 and R_3 are hydrogen or an alkyl of one to twelve carbon atoms provided that at least one of R_1, R_2 and R_3 is alkyl of two to twelve carbon atoms.

3,824,322

FLAVORED STIRRER FOR ALCOHOLIC BEVERAGES

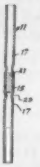
John J. Fiorella, 181 Richmond Ave., Buffalo, N.Y. 14222

Filed Dec. 20, 1971, Ser. No. 209,737

Int. Cl. C12g *3/06*

U.S. Cl. 426—134 **9 Claims**

A flavored stirring implement for alcoholic beverages contains flavoring means held to a stirring portion of the implement and communicable with the alcoholic beverage through or at an exterior surface of the implement so that when the stirrer is moved through the alcoholic beverage flavoring is dispensed to and dissolved in the beverage. In a preferred form of the invention the flavoring is held to a plastic tubular stirrer by being deposited



in perforations in the middle third of the stirrer in the hollow of the tube, with crimps in the tube also serving to hold the flavoring in place and with additional perforations being provided through the tube to circulate beverage into contact with the flavoring during stirring. Also disclosed are methods for the manufacture of such stirrers.

3,824,323

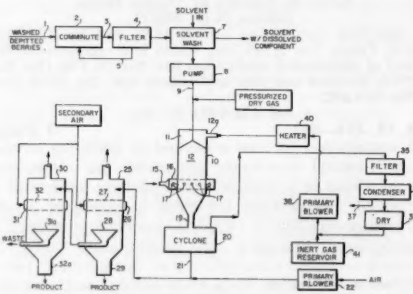
METHOD OF PREPARING TASTE-MODIFYING COMPOSITION

Robert Joseph Harvey and John Richard Fennell, Sudbury, Mass., assignors to Mirlin Corporation, Hudson, Mass.

Continuation-in-part of application Ser. No. 28,981, Apr. 15, 1970, now Patent No. 3,676,149, dated July 11, 1972, and a continuation-in-part of abandoned application Ser. No. 130,481, Apr. 1, 1971. This application July 10, 1972, Ser. No. 269,972

Int. Cl. A23l *1/26*

U.S. Cl. 426—429 **25 Claims**



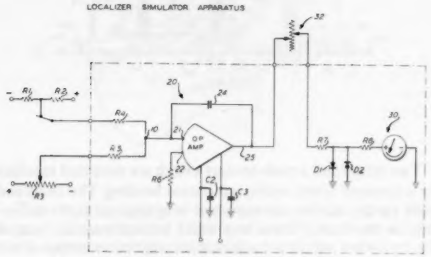
A process for obtaining a dry powdered concentrate containing the taste modifying principle from *Synsepalum dulcificum* Daniell, in a stable form which is useful in conjunction with foods such as confections, desserts, jellies, jams, canned fruit, beverages, and coatings to render sour-tasting foods sweet tasting, and to improve the flavor of certain foods while maintaining this taste modifying characteristic for long periods under normal atmospheric conditions. The concentrate is obtained by comminuting the ripe fruit of *Synsepalum dulcificum* Daniell, spray drying the comminuted slurry to reduce the moisture content between 0.5 to about 5% by weight, and separating the spray dried powder obtained on a density basis to recover a high density fraction. Carbohydrates, fats and pigments can be removed from the stable taste-modifying principle by solvent extraction to obtain concentrated compositions of the stable taste-modifying principle which are employed to form unit dosage forms thereof.

ELECTRICAL

3,824,324
LOCALIZER SIMULATOR APPARATUS

James R. Patmore, Neptune, and Joseph E. Sidoti, Red Bank, both of N.J., assignors to Electronic Associates, Inc., Long Branch, N.J.

Filed Apr. 25, 1973, Ser. No. 354,370
Int. Cl. G09b *9/08*
U.S. Cl. 35—10.2 **6 Claims**



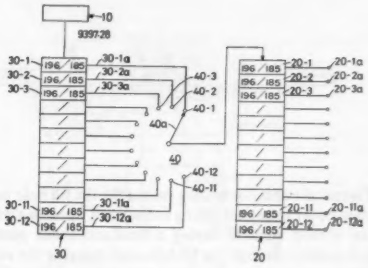
Localizer simulator apparatus for simulating a localizer approach of an aircraft to a runway at an airport, said runway having a predetermined heading and a localizer beam being provided along said runway, comprising a first voltage divider network for providing a first predetermined voltage indicative of a predetermined runway heading; a second voltage divider network for providing a variable second predetermined voltage indicative of a compass heading simulating the actual heading of the aircraft, the second voltage divider network being operable to simulate a change in the compass heading whereby the second predetermined voltage is varied to indicate the change in compass heading; a current summing network for receiving the first and the second predetermined voltages and for developing respective currents therefrom and for summing the developed currents to provide a summed current signal which is indicative of any difference between the first and second predetermined voltage; analog integrator means having an input for receiving the summed current signal and for providing a voltage output signal which is proportional to the integral of the summed current and which is indicative of any difference between the first and second predetermined voltage and which is also indicative of the amount of time there is any difference between the first and the second predetermined voltages; course deviation indicator means for receiving the voltage output signal and for providing a visual display which is indicative of any difference between the predetermined runway heading and the simulated compass heading and which also is indicative of the amount of time there was any difference between the first and the second predetermined voltages.

3,824,325
ELECTRONIC MUSICAL INSTRUMENT CAPABLE OF TRANSPOSING

Nobuharu Obayashi, Hamana-gun, and Tetsuzi Sakashita, Hamamatsu, both of Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

Filed Apr. 19, 1973, Ser. No. 352,628
Claims priority, application Japan, Apr. 20, 1972, 47-39102
Int. Cl. G10h *1/02*
U.S. Cl. 84—1.01 **3 Claims**

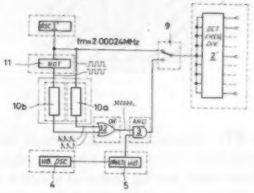
A transposing electronic musical instrument wherein a high frequency oscillator is provided on its output side with an octave frequency divider comprising twelve counter circuits to generate twelve tone signals based on a twelve tempered scale. These tone signals are respectively frequency-divided by counter circuits to obtain octave tone signals. A frequency divider for transposition comprising counter circuits is interposed between the high frequency oscillator and the octave frequency divider such that the output terminals of these counter circuits can be selectively connected to the octave frequency divider.



3,824,326
VIBRATO SIGNAL GENERATING APPARATUS FOR AN ELECTRONIC MUSICAL INSTRUMENT

Nobuharu Obayashi, Shizuoka-ken, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

Filed June 6, 1973, Ser. No. 367,399
Claims priority, application Japan, June 9, 1972, 47-56841
Int. Cl. G10h *1/04*
U.S. Cl. 84—1.25 **9 Claims**



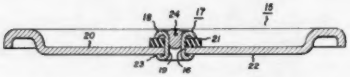
A vibrato signal generating apparatus for an electronic musical instrument characterized in that an AND gate circuit is interposed in a circuit connected between a high frequency oscillator and an octave frequency divider, and an astable multivibrator modulated by a vibrato oscillator is provided and is so arranged that the AND gate circuit is controlled by the output signal of the astable multivibrator.

3,824,327

LIQUID FILLED CAPACITOR CASING WITH SEALED ALUMINUM COVER

Norman H. Barker, South Glens Falls, and Edward A. Barlow, Glens Falls, both of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Filed Nov. 16, 1972, Ser. No. 307,158
Int. Cl. H05k 5/03
U.S. Cl. 174—17 LF 4 Claims



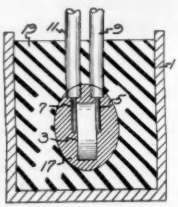
Electrical capacitor sealing means for the fill hole in an aluminum cover capacitor casing is disclosed wherein a dissimilar metal sealing member having a head and shank part has its shank passing through the fill hole and engaging the underside of the cover member. The head part is spaced from the external surface of the cover by means of a suitable sealing gasket to prevent corrosion therebetween. A preferred sealing member is a tin coated eyelet. The inner end of the eyelet is peened over to engage the cover while the enlarged head end is spaced from the cover by a gasket. Tin-lead solder applied to the eyelet seals said eyelet and the casing.

3,824,328

ENCAPSULATED PTC HEATER PACKAGES

Youn H. Ting, Attleboro, Mass., and Hans Adolf Stoeckler, Pawtucket, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 24, 1972, Ser. No. 300,022
Int. Cl. H05k 5/06
U.S. Cl. 174—52 PE 4 Claims



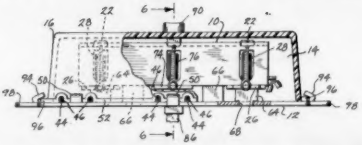
Packaged PTC heater elements wherein the package includes an outer material such as a phenolic resin in the form of a casing and an inner potting material which is thermally conductive and electrically insulated and does not deteriorate the PTC material. The potting material is one that does not include nucleophiles such as amines and the like and therefore excludes the epoxy resins. The potting material used is a silicone resin, polyamides, polyimides and ceramics which are not amine initiated. The PTC device can be completely potted in one of the above noted potting materials or a barrier layer of one of the above potting materials can be placed around the PTC material to separate it from an external potting material and then the PTC material with the barrier layer therearound can be potted with the well known epoxy resin.

3,824,329

HOUSING FOR ELECTRICAL DEVICE HAVING CONDUCTOR OPENINGS WITH STRAIN RELIEF

Spencer C. Schantz, 16608 W. Rogers Dr., New Berlin, Wis. 53151

Filed Nov. 15, 1972, Ser. No. 306,638
Int. Cl. H05k 5/02
U.S. Cl. 174—65 R 5 Claims



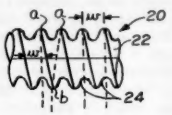
Two relays and a push-to-start switch are mounted together on a common frame within a common housing. The cores and coils for the devices are mounted in spaced parallel relationship on the frame. Three legs which extend from one side of the frame are supported adjacent an edge of an insulated terminal strip which latter supports the terminals, contacts, and contact arms for the devices. Two legs which extend at right angles to the first-mentioned legs and which are bent from spaces therebetween are received by slots in a base plate which is also slotted to receive portions of the terminal strip and the frame to support the same. Recesses are formed in the housing member adjacent to the base plate to allow insulated conductors to enter the housing. The recesses contain teeth that bite into the insulation over the conductors to prevent them from being moved longitudinally.

3,824,330

CORRUGATED SHEATH CATV DROP WIRE

Fred Lang, Hillside, N.J., assignor to General Cable Corporation, New York, N.Y.

Filed May 25, 1973, Ser. No. 363,814
Int. Cl. H01b 7/18
U.S. Cl. 174—102 D 12 Claims

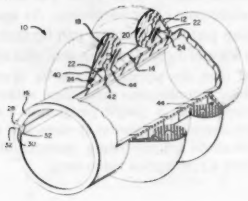


This electrical cable construction has an insulated center conductor with a metal strip longitudinally folded around the insulated conductor, and with the strip having corrugations extending in directions at a substantial angle to the edges of the strip. The shield formed by the metal strip may serve as a shield or as the outer conductor of a coaxial cable. Since the major stiffening caused by corrugations is in the direction in which the corrugations extend, this invention makes the corrugation shield bend more easily around the insulated conductor; and the greater ease in folding the strip around the conductor is an important advantage with small wires. In the preferred embodiment, corrugations extend at acute angles and come together at a mid region in a herringbone pattern. The invention is useful for CATV drop cords with the shielding serving as the outer conductor.

3,824,331
RESILIENT COVER HAVING A REMOVABLE EXTERNAL SUPPORT MEMBER

James Lenhart Mixon, Jr., and Ernest Lloyd Beinhaur, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 25, 1973, Ser. No. 373,528
Int. Cl. H01r 5/00
U.S. Cl. 174—135 6 Claims

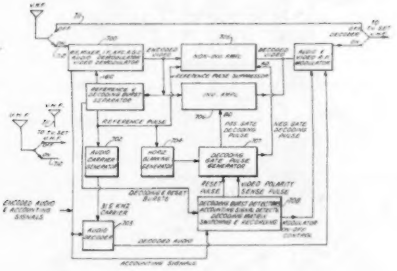


This invention pertains to a resilient tubular cover being supported in a stretched condition by an easily removable one piece support member positioned around the outside of the cover. More particularly, the invention resides in a hollow member through which the resilient cover passes and on which the rolled portions of the resilient cover are received and removably retained.

3,824,332
PAY TELEVISION SYSTEM

Irving Horowitz, Eatontown, N.J., assignor to Teleglobe Pay TV System Inc., New York, N.Y.

Filed Feb. 18, 1972, Ser. No. 227,582
Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 45 Claims

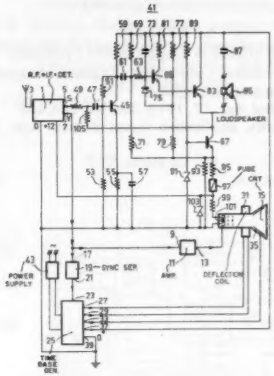


Reference pulses of opposite polarity to the horizontal sync pulses are added to the composite television signal just preceeding each horizontal sync pulse. The video portion of the signal is inverted for randomly selected fields. Coding bursts are added to the composite signal to indicate whether subsequent field is inverted. Transmitter clamped to reference pulse level. Reference pulse used for AGC in decoder. Video portion of received signal inverted in accordance with coding bursts. Audio program signals encoded by modulation on suppressed carrier centered above audio range. Barker signals transmitted on normal audio frequencies.

3,824,333
AUDIO OUTPUT STAGE

Antonius Boekhorst, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,672
Claims priority, application Netherlands, Dec. 23, 1971, 7117711
Int. Cl. H04n 5/44
U.S. Cl. 178—5.8 R 5 Claims

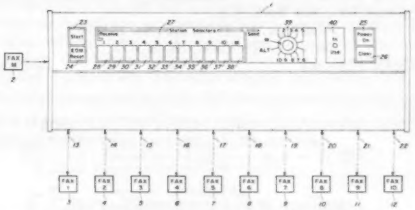


An audio output amplifier powered from a television horizontal circuit has a constant current source series coupled to the audio output stage. As the audio signal varies, the constant current divides between the output stage and a loudspeaker coupled in parallel with it in accordance with the strength of the audio signal. Thus a constant load is presented to the horizontal circuit, which does not affect the deflection.

3,824,334
DATA COMMUNICATIONS NETWORK

Charles L. Jacobson, Pittsford; John Tambert, Rochester, and Stanley J. Zurakowski, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed July 23, 1971, Ser. No. 165,527
Int. Cl. H04n 1/32
U.S. Cl. 178—6 33 Claims



A method of establishing data communication between a data transmitting device and one or more data receiving devices and the apparatus therefor are provided in accordance with the teachings of the present invention. One of a predetermined number of data transmitting devices is selected to transmit data information. The capability of each of a predetermined number of data receiving devices to receive data information is determined and one or more of said predetermined number of data receiving devices is selected to receive data information. The data transmitting device selected to transmit data information is enabled to commence data information

transmission and the data information received therefrom is transmitted to those data receiving devices selected to receive and capable of receiving data information. Indications of the selection of data transmitting and data receiving devices are provided as well as indications of the selection of data receiving devices not capable of receiving data information. The transmission of data information to a data receiving device that is not capable of receiving data information although said data receiving device has been inadvertently selected, is prevented.

3,824,335

RECORDING TELEVISION SIGNALS

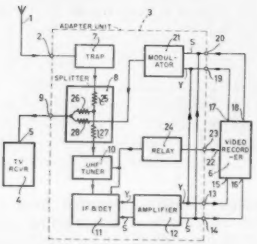
George Henry Hart, Cambridge, England, assignor to Pye Limited, Cambridge, England

Filed Apr. 17, 1972, Ser. No. 244,448

Claims priority, application Great Britain, Apr. 28, 1971, 11897/71

Int. Cl. H04n *5/22*

U.S. Cl. 178—6.6 A **10 Claims**



For recording television signals on a video tape recorder having an input of video frequency and displaying the signals on a television receiver having an RF input, an adaptor is provided which has demodulating means for enabling incoming RF signals to be recorded on said recorder and modulating means for modulating the output of the tape recorder at a suitable carrier frequency for the RF input of the television receiver.

3,824,336

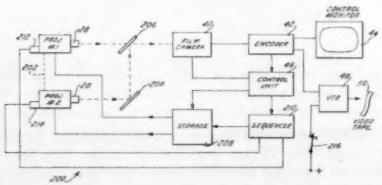
EDITING SYSTEM AND METHOD

George K. Gould, Roslyn, and Armando Belmares Sarabia, Long Beach, both of N.Y., assignors to Teletronics International, Inc., New York, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,507

Int. Cl. G02b *15/00;* **H04n** *5/78, 7/18*

U.S. Cl. 178—6.8 **18 Claims**



Images on motion picture film are converted into electrical video signals by means of a motion picture projector and a film camera. The video pictures are displayed sequentially on a video receiver screen. The film is stopped so that a selected frame is displayed on the screen. The stationary image on the screen then is enlarged as much as necessary by means of either a zoom lens to replace the usual projection lens in the motion picture projector, or by electronic "underscanning" of the image. Means also are provided for moving the image both in the horizontal and vertical directions so as to position certain objects in a more desirable location, or, in some cases, to move certain objects or elements of the image out of the outline of the screen, thus effectively editing them out of the film. Then, the modified video signals are recorded on video tape. Portions of the tape which have had editing work performed on them then are spliced together with other portions of tape to form the finished, edited video tape. The editing can be combined with electronic color correction. As another alternative, two motion picture projectors can be used instead of one, with means for storing the enlargement and other editing information, and then the projectors can be operated alternatingly to produce a continuous video tape without splicing. As a further alternative, a single projection can be used together with two zoom enlargement systems and appropriate shutters, with the zoom systems being operated alternatively, in order to produce a continuous video tape.

3,824,337

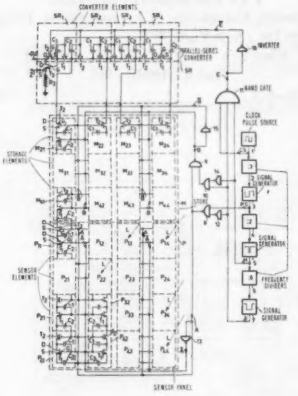
SENSOR FOR CONVERTING A PHYSICAL PATTERN INTO AN ELECTRICAL SIGNAL AS A FUNCTION OF TIME

Frederik Leonard John Sangster, and Hendrik Heijns, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 232,561, March 7, 1972, abandoned. This application July 20, 1973, Ser. No. 381,016

Int. Cl. H04n *3/16*

U.S. Cl. 178—7.1 **7 Claims**

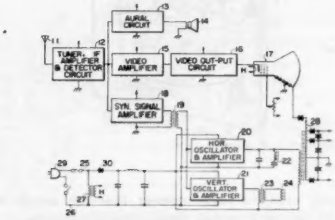


A sensor for television, formed with converter elements integrated in a semiconductor body. The converter elements are divided into sensor elements for picking up the information originating from a physical pattern such as, for example, a scene and converting the information into an electrical charge pattern. The information from the sensor elements is passed to converter elements in the form of storage elements at a low-frequency during the field blanking period. Part of the information is passed to converter elements of a parallel-series converter during the field blanking period. The information from the storage elements is passed on line by line during the line blanking period to the parallel-series converter and is read out at a high frequency during the line scan period.

3,824,338
TELEVISION RECEIVER POWER SUPPLY

Takuji Suzuki, and Norihisa Imao, both of c/o The General Corporation, 1116, Suenaga, Kawasaki-shi, Japan

Continuation-in-part of Ser. No. 113,982, Feb. 9, 1971, abandoned. This application June 6, 1973, Ser. No. 367,650
Claims priority, application Japan, Feb. 12, 1970, 45-14079
Int. Cl. H04n 5/44
U.S. Cl. 178—7.3 R 3 Claims

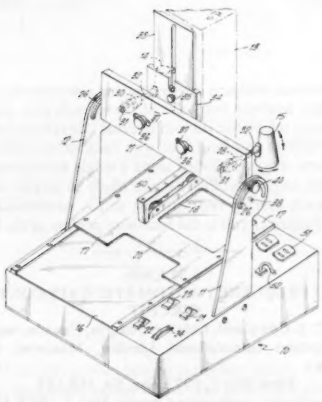


A television receiver of transformerless type having primary and secondary voltage supply circuits which respectively supply ungrounded and grounded supply voltages to horizontal and vertical deflection circuits on the one hand and other remaining circuit components on the other hand. D.c. isolation is provided between the grounded and ungrounded components by an isolating transformer connected between sync signal amplifier means and the deflection circuits, the transformer however permitting a.c. signal transmission between the sync signal amplifier means and the deflection circuits.

3,824,339
PROMPTING DEVICE FOR LECTURERS AND TELEVISION ANNOUNCERS

Alvin S. Eisenberg, Little Neck, N.Y., assignor to Q-TV, Inc., New York, N.Y.

Filed Nov. 9, 1972, Ser. No. 305,057
Int. Cl. G03b 31/00; H04n 5/24
U.S. Cl. 178—7.81 2 Claims

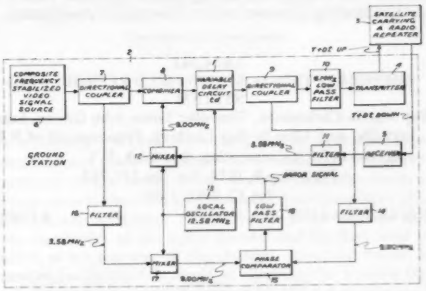


A manuscript in card, sheet, or strip form is moved across a table which is the object plane of a television camera. The camera is adjustably positioned above the table and the camera output is connected to a closed circuit system which includes one or more television picture tubes for showing an image of the manuscript. One picture tube is positioned in front of the speaker. Electrical controls are provided for adjusting the speed of the manuscript as it moved through the object plane. Adjustments are also available for focusing the television camera lens and for swinging the camera from one position to another to pick up information to be conveyed to the speaker.

3,824,340
VARIABLE TRANSMISSION TIME DELAY COMPENSATION ARRANGEMENT

Cleatus R. Sensney, Oakland, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Nov. 8, 1972, Ser. No. 304,681
Int. Cl. H04i 7/00
U.S. Cl. 178—69.5 DC 10 Claims



This arrangement includes a variable delay circuit through which a color television signal is propagated prior to transmission to a communication satellite. The television signal is received from the satellite at the transmitting station. The color subcarrier is extracted from the received television signal and also from the original television signal. Both of the extracted color subcarriers are translated to the same frequency disposed above the frequency of the television signal. The translated subcarrier extracted from the received television signal is propagated through the delay circuit with the original television signal. At the output of the delay circuit this latter subcarrier is extracted and applied to a phase comparator for comparison with the translated subcarrier extracted from the original television signal. A control signal is produced proportional to the phase difference between the two compared translated subcarriers. The control signal controls the delay of the delay circuit to maintain the compared translated subcarriers in a predetermined phase relationship to compensate for variable transmission time delay to the satellite.

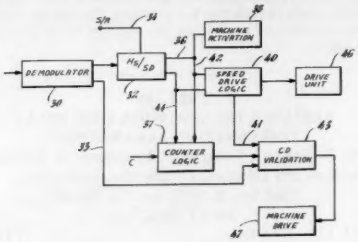
3,824,341
DATA COMMUNICATION SYSTEM

Charles L. Jacobson, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 16, 1972, Ser. No. 253,773
Int. Cl. H04l 15/24, 17/16
U.S. Cl. 178—88 8 Claims

A circuit for sensing reception of carrier in an information transmission system which employs valid detection of a carrier including filtering, comparison, and time delay, to determine propriety of a carrier, by a logic arrangement for digital interrogation including a pair of counters under the control of a third counter. Each of the pair of counters is advanced by signals derived from the detection circuitry over a predeter-

mined time frame set by the third counter, and the counter outputs decoded to a deactivation device in the event of improper carrier detection. In addition, a resettable counter monitors the transmission during information flow. Failure to reset, indicating improper carrier, also triggers deactivation.



3,824,342

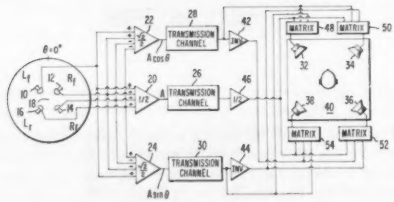
OMNIDIRECTIONAL SOUND FIELD REPRODUCING SYSTEM

Roy Martin Christensen, Titusville; James John Gibson, Lambertville, and Allen Le Roy Limberg, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 9, 1972, Ser. No. 251,742

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GQ **6 Claims**



Systems for producing a sound field in a region surrounding a listener wherein three information channels are utilized for conveying a first signal representative of total sound pressure (A) at a point in space, and two additional signals, A cos θ and A sin θ, for describing the directional characteristics of the sound field. An array of microphones having, for example, equal cardioidal response characteristics are arranged in the original sound field for detecting sound information. Linear, additive signal combining networks are coupled to the microphones for producing the three signals. A plurality of loudspeakers (e.g., four) are coupled to the three information channels by additional linear signal combining networks for reproduction of the sound field. Systems for synthesizing the three signals by electronic devices are also described.

3,824,343

MULTIPLE DRIVER DYNAMIC LOUD SPEAKER

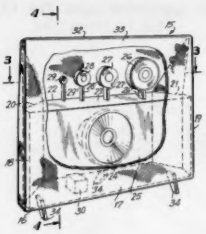
Joh G. Dahlquist, 500 E. 85th St., New York, N.Y. 10028

Filed Nov. 29, 1972, Ser. No. 310,535

Int. Cl. G10k *11/00*

U.S. Cl. 179—1 E **5 Claims**

A loud speaker assembly capable of producing coherent sound with multiple driver, dynamic loud speakers is provided, which assembly is characterized by sonic frequencies of the mid-range and treble frequency bands being generated by wide dispersion, dynamic transducers which are free-air mounted within an accoustically transparent enclosure. The mounting of all of the transducers in the assembly is preferably coordinated as a function of the rise time characteristics of the transducers by positioning the transducers forwardly and rearwardly in the assembly along their radiating axes with respect to a listening area, in such manner that the sound waves generated by electrical signals simultaneously impressed upon the transducers will be simultaneously impinged upon a point in the listening area equidistant from the radiating axes of the transducers.



3,824,344

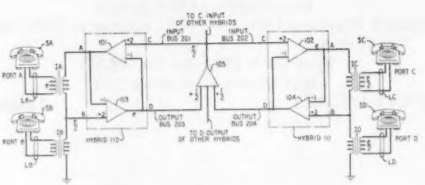
CONFERENCE BRIDGE CIRCUIT

Dennis Bryan James, Rumson, and James Royce McEowen, Holmdel Township, Monmouth County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 22, 1973, Ser. No. 343,826

Int. Cl. H04m *3/56*

U.S. Cl. 179—1 CN **10 Claims**



A conference bridge is devised having substantially uniform transmission between two pairs of ports, each port connected to a two-wire telephone station. Internal conversion from two-wire to four-wire and from four-wire back to two-wire at each pair of ports is accomplished using a single hybrid employing differential amplifiers. Provision is made to couple additionl hybrids, each serving two stations, to the conference bridge via a summation circuit in the four-wire portion of the bridge.

3,824,345

AUDIO FREQUENCY AUTOMATIC GAIN CONTROL CIRCUIT

Michael C. J. Cowpland, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada

Filed May 7, 1973, Ser. No. 358,155

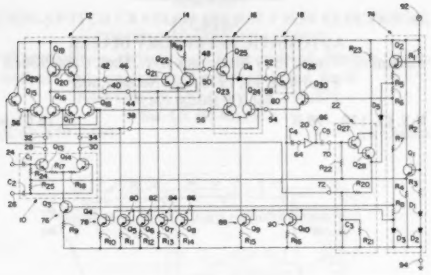
Claims priority, application Canada, May 2, 1973, 170249

Int. Cl. H04m *1/74*

U.S. Cl. 179—1 VL **23 Claims**

An integrated circuit design for an audio frequency automatic gain control circuit, for use in telephone tone receiver circuits. To ensure stability, along with rapid response and recovery times, a control voltage derived in part from the

audio frequency signal carried by the automatic gain control circuit is used to control the attenuation of a balanced attenuator stage and to introduce a direct current bias voltage shift to the audio frequency signal in its passage through a subsequent unbalanced stage. This d.c. bias voltage shift occurs as a linear function of the voltage difference between the control



and reference voltages. The use of a combination of balanced and unbalanced stages minimizes undesired control voltage feedthrough along the audio frequency signal path, which might be in either a regenerative or degenerative direction, while the unbalance introduced by the bias voltage shift circuitry, which is in the degenerative direction, swamps out any regenerative control voltage feedthrough.

3,824,346

FM STEREO DEMODULATOR

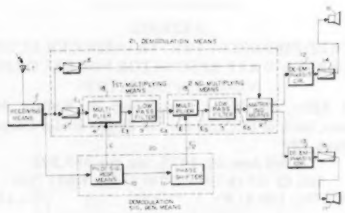
Masashi Kanno, Kadoma; Sukeichi Miki, Ikoma, and Tsuneo Takezaki, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Apr. 17, 1972, Ser. No. 244,559

Claims priority, application Japan, Apr. 21, 1971, 46-25851

Int. Cl. H04h *5/00*

U.S. Cl. 179—15 BT **1 Claim**



An FM stereo receiver having receiving means; demodulating signal generating means which produces a first demodulating signal having a fundamental frequency of 19 KHz and a phase the same as that of a pilot signal and which produces a second demodulating signal having a fundamental frequency of 19KHz and a phase different by $\pi/2$ radian from that of the pilot signal; and demodulation means which receives the first and the second demodulating signals and a f.equency discriminated signal from the receiving means and which reproduces as discrete signals the L and R audio signals.

3,824,347

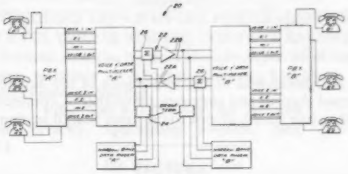
VOICE AND DATA MULTIPLEXING SYSTEM WITH IMPROVED SIGNALLING

Thomas A. Sorber, Huntingdon Valley, and Ralph C. Unks, Flourtown, both of Pa., assignors to I. I. Communications Corporation, Lionville, Pa.

Filed Feb. 1, 1973, Ser. No. 328,565

Int. Cl. H04j *3/12*

U.S. Cl. 179—15 BM **10 Claims**



A multiplexing system is provided for use in combination with a common grade telephone voice channel. A first means is provided which during a first mode of operation limits a physical speech band into a first reduced frequency band of a predetermined bandwidth. The bandwidth is less than one-half of the bandwidth of the voice channel and the first band is situated at the low end of the channel. A second means is operative during the first mode of operation for limiting the physical speech band into a second reduced frequency band of a predetermined bandwidth. The second means positions the second band above the first band in the channel. The second band is also less than one-half of the bandwidth of the voice channel. The second means is operative during a second mode of operation for limiting the physical speech band into a third reduced frequency band which is slightly narrower than the bandwidth of the voice channel. A switching means is provided for disabling the first means during the second mode of operation. Means are provided for generating a first signal indicating the use of the first band, and first dialing signals associated with the use of said band and for providing a second signal indicating the use of the second or the third band and second dialing signals associated with the use of said band. Means are also provided for combining the first and second bands, the first and second signals during the first mode of operation and for combining the third band and the second signal during the second mode of operation. The system also comprises means for discriminating between said first and second signals and other signals which may appear in the system, dialing signal discriminating means for discriminating between true dialing signals and other signals which may appear in the system and normalizing means for normalizing the on/off ratio of the dialing signals.

3,824,348

STATUS INDICATION CIRCUIT FOR SHARED TELEPHONE EQUIPMENT

Donald R. Merriam, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

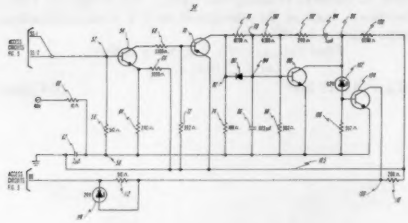
Filed May 4, 1973, Ser. No. 357,320

Int. Cl. H04q *3/00*

U.S. Cl. 179—18 AB **10 Claims**

A status indication circuit is provided for indicating the busy-idle condition of shared telephone call processing equipment to an access circuit which is attempting to complete a

connection to the shared equipment. The status indication circuit provides a substantially constant busy voltage indication



which is independent of the impedance of the access circuit connected thereto and prevents simultaneous connections by more than one access circuit to the same shared equipment.

3,824,349

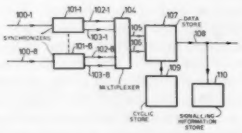
METHOD OF TRANSFERRING INFORMATION

Robert Bertold Buchner, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 221,234, Jan. 27, 1972, abandoned. This application July 23, 1973, Ser. No. 381,755

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **2 Claims**



A method of transferring information via a time-switched connection which extends via at least one first time channel with which a channel interval of a first cycle is associated, a synchronizer, a data register and a second time channel with which a channel interval of a second cycle is associated. For the loss-free transfer of the information to an information receiver the data register is read out at least three times in a non-destructive manner in each second cycle, the original information being derived from the multiple information thus obtained by elimination of the excess of information.

3,824,350

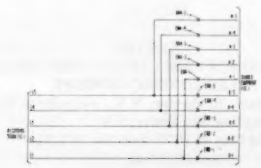
ACCESS CIRCUIT FOR SHARED TELEPHONE EQUIPMENT

Donald R. Merriam, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed May 4, 1973, Ser. No. 357,297

Int. Cl. H04q *3/00*

U.S. Cl. 179—18 AB **10 Claims**



An access circuit is provided for completing a connection to an idle piece of shared call processing equipment which has a status indication circuit which indicates the busy-idle condition of the shared equipment. The access circuit shapes a request-for-service pulse which is applied thereto to permit switching components in the access circuit to definitively select a single idle piece of shared equipment to which to complete the connection and, when the idle piece of shared equipment has been selected, the access circuit immediately transmits a signal to the status indication circuit to indicate a busy condition for the selected piece of shared equipment.

3,824,351

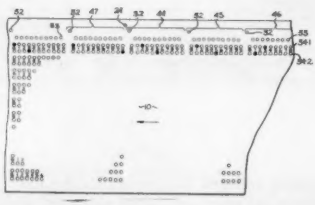
AUTOMATIC REPERTORY DIALER

Thomas G. Wixon, 1589 Blackstock Ave., Simi, Calif. 93065

Filed Aug. 21, 1972, Ser. No. 282,608

Int. Cl. H04m *1/45*

U.S. Cl. 179—90 B **16 Claims**



An automatic repertory dialer for use with a standard impulse telephone dialing system. A series of ten pulses for each digit to be dialed is generated by the motion of a programming belt on which is also stored, in coded form, a plurality of telephone numbers which may be dialed. The number of pulses from each series of 10 pulses which are delivered to the dialing circuit is determined by the position of a mark on the programming belt. For each telephone number to be programmed, there are eleven positions on the programming belt associated with each digit of the telephone Number. These positions correspond to the number of pulses to be transmitted for that digit, from zero to 10. A mark in the appropriate position will cause that number of pulses to be transmitted for that particular digit. The circuit which accomplishes the dialing function is responsive to marks on the programming belt and transmits signals from the time the belt is in a first position to the time it assumes a second position, said positions being established by marks on the belt.

3,824,352

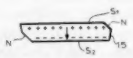
STACKED PIEZOELECTRIC TRANSDUCER ACTING AS QUARTER-WAVE RESONATOR FOR RECORDING VIDEO INFORMATION

Robert Adler, Northfield, and Roger W. Knitter, Hoffman Estates, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,392

Int. Cl. G11b *3/00*; **H04r** *17/04*; **H01v** *7/00*

U.S. Cl. 179—100.41 P **12 Claims**



A recording head for applying a video program to a record disc employs a transducer having a plurality of planar piezoelectric elements united in a stack arrangement which collectively exhibits a predetermined acoustic impedance. A base member, bonded to one terminus of the stack, has a specific impedance at least an order of magnitude greater than

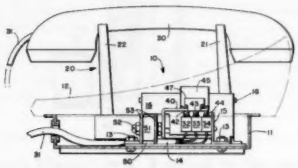
the stack impedance so that the stack operates substantially as a quarter-wave resonator. An energizing signal applied to the stack develops longitudinal mode vibratory displacements of the stack proportional to the excursions of the energizing signal. A coupler, bonded to a second terminus of the stack, translates the vibratory displacements to a stylus which generates a pattern on an impressionable surface of the record disc.

3,824,353

HOOK-SWITCH CRADLE ASSEMBLY FOR ELECTRICAL COMMUNICATION HANDSET

William E. Howe, Orinda, and Bruce A. Buell, Walnut Creek, both of Calif., assignors to Voycall, Oakland, Calif.

Filed Oct. 19, 1972, Ser. No. 298,871
Int. Cl. H04m *1/08*
U.S. Cl. 179—164 11 Claims



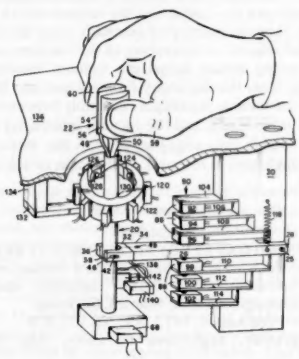
A hook-switch type cradle assembly for use with an electrical communication handset providing reduced sensitivity to spurious undesired signals caused by accidental or intentional "teasing" and a reduced susceptability to "bouncing" is disclosed. An embodiment of the invention is described in which microswitches are utilized and in which the mass in motion during operation is reduced as compared to prior art. Various embodiments of the mechanical components for accomplishing the objects of this invention are disclosed.

3,824,354

OPERATOR MEANS ASSOCIATED WITH MULTIPLE SWITCH ARRAY AND SIGNAL TO FUNCTION CORRELATOR MEANS

Norman G. Anderson, and Norman L. Anderson, both of 126 Westlook Cir., Oak Ridge, Tenn. 37830

Filed Mar. 17, 1972, Ser. No. 235,614
Int. Cl. H01h *9/00*
U.S. Cl. 200—1 R 6 Claims



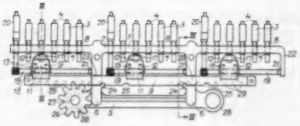
A man-to-machine interface system including activator or wand means which is movable, using generally the same musculature as in writing, to and/or through various combinations of vertical and lateral positions to develop at least two signals, one of which is representative of the vertical position of the wand and one of which is representative of the lateral position of the wand. These signals may be developed as by the wand means actuating switch means. These signals are paired by appropriate means and correlated with machine functions assigned to the various combinations of signals to provide input signals to the machine that cause it to perform those functions that correspond to those combinations of positions to or through which the wand is moved.

3,824,355

DE-ENERGIZED TAP CHANGER FOR TRANSFORMERS WITH POLYPHASE SLIDING CONTACT ASSEMBLY

Sivert Norman, and Jan Syren, Uno Zetterlund, all of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 5, 1973, Ser. No. 367,098
Claims priority, application Sweden, June 27, 1972, 8402/72
Int. Cl. H01h *15/06*
U.S. Cl. 200—16 F 7 Claims



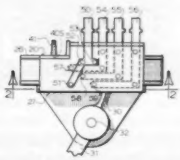
A de-energized tap changer for transformers comprises a frame of insulating material, a slide which carries movable contacts, the slide being displaceable in the frame, and a drive for the slide. The frame of the tap changer is manufactured in one piece and consists of a terminal bar with attachment means for connections from the transformer windings, a carrier member carrying the drive, and cross-bars connecting the terminal bar and the carrier member. The movable slide is displaceable in grooves in the cross-bars and can be inserted in the grooves only when situated outside its ordinary working area.

3,824,356

ACTUATOR FOR ELECTRO-MOTIVE FORCE AND FLUID PRESSURE FORCE

Theodore E. Fiddler, 1268 Suffield Dr., Birmingham, Mich. 48008, and Arnold G. Adams, Troy, Mich., assignors to said Fiddler, by said Adams

Filed Dec. 14, 1972, Ser. No. 315,106
Int. Cl. H01h *9/06*
U.S. Cl. 200—61.86 3 Claims



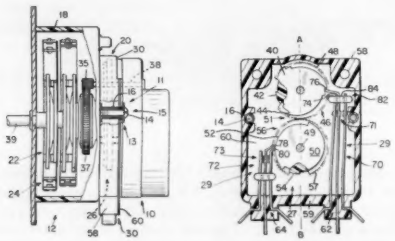
A control device having one moving body for actuating application of both electro-motive-force (EMF) and fluid-pressure-force (FPF) in a system such as vehicular heating, ventilating, and/or air-conditioning having a case with a first wall equipped with selectively positioned FPF ports located

between FPF supply and use in the system and a second wall equipped with EMF selectively positioned contacts located between EMF supply and use in a system; a movable body having a first surface equipped with a grooved maze lying against the ported wall of the case forming a plurality of selective FPF channels relative to the FPF supply and use ports and having a second surface equipped with a slide bridge member for selectively interconnecting the contacts to close EMF circuits; and means for selectively moving the body relative to the case to change the maze channels relative to the FPF ports and change the bridge member relative to the EMF contacts to selectively and simultaneously control the application of EMF and FPF in the system.

3,824,357
ELECTRICAL TIMER WITH IMPROVED GEAR-CAM STRUCTURE

William R. Brown, and Noel C. Mullikin, both of Beech Grove, Ind., assignors to P. R. Malory & Co., Inc., Indianapolis, Ind.

Filed Apr. 16, 1973, Ser. No. 351,347
Int. Cl. H01h *7/08, 43/10*
U.S. Cl. 200—38 B **29 Claims**

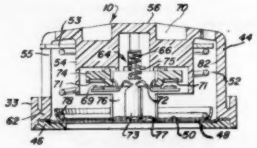


A timing means, a substantially-thin second timing means, and a motor are combined in such a manner that one is sandwiched in between the other two.

3,824,358
CALIBRATABLE PRESSURE SWITCH WITH ADJUSTMENT MEANS

Joseph L. Edwards, West Asheville; William D. Penland, Weaverville, and James B. Warren, Skyland, all of N.C., assignors to Square D Company, Park Ridge, Ill.

Filed May 10, 1973, Ser. No. 359,150
Int. Cl. H01h *35/34*
U.S. Cl. 200—83 S **10 Claims**

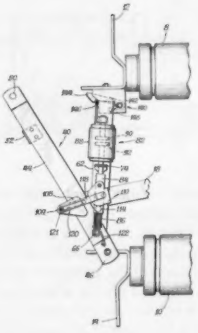


A casing for the switch has an internal cylindrical projection provided with a cavity for receiving a plunger-operated switch mechanism. A helical range spring surrounding the projection abuts an adjustable upper spring seat, and a diaphragm has a lower seat for the range spring and a switch plunger bonded to its inner side. The internal cylindrical projection has a pair of circumferentially spaced arcuate extensions extending from the cylindrical projection which serves as a stop means for the diaphragm and prevents undue movement of the plunger. The upper spring seat is generally annular but has generally radially protruding, parallel spaced end portions, which, when pressed together, permit the upper spring seat to be disengaged from the casing and raised or lowered relative to the casing. Upon release of the protruding end portions, circumferentially spaced projections on the outer periphery of the annular portion of the upper spring seat engage the inner wall of the casing to maintain the spring seat in a selected position.

3,824,359
VACUUM LOADBREAK SWITCH

Kazou H. Date, Milwaukee, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Oct. 6, 1972, Ser. No. 295,527
Int. Cl. H01h *33/12, 33/66*
U.S. Cl. 200—146 R **7 Claims**



A loadbreak switch is provided in which a pair of spaced apart main current carrying blades are pivotally mounted for movement into and out of engagement with a stationary terminal, and a vacuum interrupter assembly has a nested position between the two blades and is also pivotable into and out of engagement with the stationary terminal. The main blade assembly and the vacuum interrupter assembly are both operable in response to a main switch operating mechanism. The vacuum interrupter assembly includes a vacuum switch and an operating device which is responsive to disengaging movement of the main blade assembly from the stationary terminal to first open the contacts of the vacuum switch and then unlatch the vacuum interrupter assembly from the stationary terminal. Subsequent to unlatching of the vacuum interrupter assembly, spring means snaps the vacuum interrupter assembly away from the stationary terminal and into the nested position of the vacuum interrupter assembly between the main blades. The main blades and the vacuum interrupter assembly are also pivotable into engagement with the stationary terminal as a single unit in response to the main switch operating mechanism.

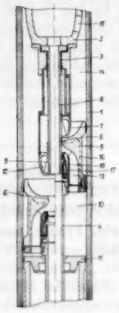
3,824,360
COMPRESSED GAS ELECTRICAL CIRCUIT BREAKER

Ernst Slamecka; Karl Martschini; Eckhard Pflaum, and Heinz-Helmut Schramm, all of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 4, 1972, Ser. No. 277,978
Claims priority, application Germany, Aug. 6, 1971, 2140284
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 A **11 Claims**

A compressed-gas electrical breaker, is disclosed in the switching chamber of which are arranged a compression

space, a fixed contact, a movable contact and a blasting device connected with the movable contact. A movable nozzle body, designed as a blast piston is connected with the movable contact, and operates in conjunction with a spring-loaded shield. The spring-loaded shield is movably guided on the stationary



contact and is adapted to be displaced by the nozzle body from the open position of the breaker in which the shield covers the stationary contact to the closed position of the breaker in which the shield engages the nozzle member to seal the compression space of the breaker.

3,824,361

HIGH-VOLTAGE ELECTRIC CIRCUIT BREAKER

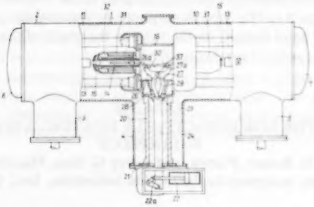
Dieter Noack, and Heiner Marin, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 15, 1973, Ser. No. 323,720

Claims priority, application Germany, Jan. 28, 1972, 2204556

Int. Cl. H01h *9/40*

U.S. Cl. 200—148 F **3 Claims**



A high-voltage electric circuit breaker has two mutually oppositely movable contacts which cooperate with two stationary contacts, the movable and stationary contacts being positioned on a common axis, and the two movable contacts being actuated by two bell-cranks which translate transverse motion from an actuator to motion in alignment with the movable contacts to open and close the latter relative to the stationary contacts. The two bell-cranks are pivoted on the same axis but are laterally offset from each other so that they can swing free from each other by overlapping each other. This permits the bell-cranks to have a large lever ratio but by swinging in overlapping axes, to be enclosed in a relatively small casing. Thus it is possible to move the movable contacts through longer strokes and permit them to be of the piston and cylinder arc-blasting type.

3,824,362

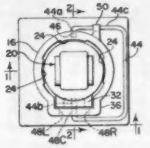
ALTERNATE ACTION SWITCH MECHANISM

George John Bury, Lake Villa, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed May 23, 1973, Ser. No. 363,228

Int. Cl. H01h *13/56*

U.S. Cl. 200—153 J **7 Claims**



An alternate action switch mechanism is achieved by means of a cam including a cam slot into which a cam follower is inserted to engage a plurality of cam surfaces that are formed as a series of ramps and drop-offs. The cam slot is formed as a closed loop so that the cam follower repeatedly falls into one drop-off after another after it rides up the associated ramp surfaces. The cam follower is thereby prevented from returning to the previous ramp by each drop-off and it, therefore, traverses the cam slot in a single direction. At one position of the cam follower, resulting from a first depression of the plunger, the switch is locked into an actuated position. When the plunger is subsequently depressed, the cam follower returns to its original position, thereby deactuating the switch.

3,824,363

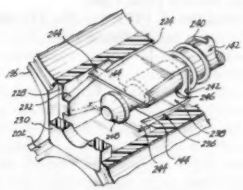
INTERCHANGEABLY STRUCTURED ELECTRICAL CARTRIDGE WITH CROSS-BIASED LATCH MECHANISM FOR THE RELEASABLY TETHERED CAP OF THE SAME

Maurice D. Fuller, Mercer Island, Wash., assignor to Korry Manufacturing Company, Seattle, Wash.

Filed June 26, 1972, Ser. No. 266,305

Int. Cl. H01h *3/20, 9/20*

U.S. Cl. 200—328 **34 Claims**



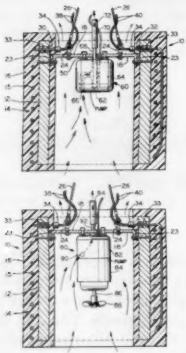
The cartridge is interchangeably structured to accommodate various servomechanisms for the switch unit or other operating unit therein, as well as to accommodate various electrical arrangements for the pushbutton cap which is slidably guided in the open end of the cartridge to operate the servomechanism. The cap is releasably latched to each servomechanism by a cross-biased latch mechanism which prevents the cap from being shocked out of the cartridge, but which can nevertheless be overridden by a finger pull on the cap when it is desired to remove the cap from the cartridge. When so removed, the cap is tethered to the cartridge, although the tether is releasable from the cap, and vice versa, should this become necessary or desirable.

3,824,364

APPARATUS FOR HEATING A VISCOUS LIQUID

John F. Cachat, Cleveland, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed June 7, 1973, Ser. No. 367,867
Int. Cl. H05b 5/08, 3/00; B67d 5/62
U.S. Cl. 219—10.51 9 Claims



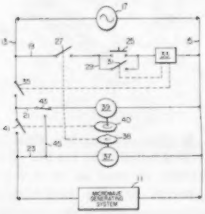
An open ended tubular heating unit is provided which is comprised of a stainless steel tube surrounded by an induction heating coil which is disposed in magnetically coupled relationship with the tube. The tube and coil are encapsulated in insulating material, and the unit is submersible in a viscous liquid such as oil which is disposed in a vessel and the temperature of which liquid inhibits pumping thereof from the vessel. The unit is adapted to be supported in suspension and the coil energized to inductively heat the stainless steel tube, whereby the liquid inside and surrounding the unit is heated to elevate the temperature thereof and reduce the viscosity thereof. A driven impeller may be provided within the tubular unit to impel liquid flow therethrough, and a driven pump may be provided within the unit to pump the heated liquid from the vessel.

3,824,365

MICROWAVE OVEN CONTROL SYSTEM

William R. Tapper, New Brighton, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 7, 1972, Ser. No. 313,188
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 21 Claims



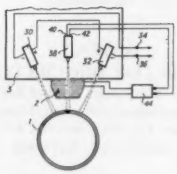
A control circuit for a microwave oven is disclosed which functions to automatically control the running time of the microwave generator to enable it to run continuously, during its cooking cycle, or intermittently, during its defrosting cycle. The control circuit includes a timer control switch operatively coupled to a timer motor. The timer control switch functions to control the current flow from the source of electrical power to the microwave generator. The circuit also includes a defrost control switch which functions to cyclically open and close a series current path to the microwave generator. A bypass circuit is also provided across the defrost control switch to short-circuit the defrost switch and provide a bypass current path to the microwave generator. A "cook-defrost" switch is provided to connect the circuit to the bypass circuit for the cooking mode, or to disconnect the bypass circuit to enable the current path to be governed by the defrost control switch for the defrosting mode. In one embodiment, the defrost control switch is coupled to a second timer motor which, in turn, is adapted to be cut into and out of the circuit by the "cook-defrost" switch. In a second embodiment, the defrost control switch is coupled to the first timer motor and is continuously operated thereby.

3,824,366

PROCESS AND APPARATUS FOR ANNEALING THE WELD BEAD OF A WELDED METALLIC TUBE

Andre Garnier, Aymeries, France, assignor to Vallourec Usines a Tubes de Lorraine-Escaut et Vallourec Reunies, Paris, France

Continuation-in-part of Ser. No. 180,350, Sept. 14, 1971, Pat. No. 3,767,882. This application Oct. 11, 1973, Ser. No. 405,382
Claims priority, application Luxembourg, Sept. 17, 1970, 61704
Int. Cl. H05b 5/08
U.S. Cl. 219—10.77 3 Claims



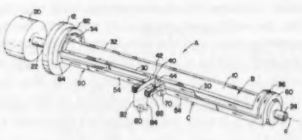
An apparatus for treating continuously welded metallic tubes comprises a series of longitudinal inductors mounted on movable carriages which are adapted to be pivotal co-axially with respect to the tube in response to the angular position of the weld bead formed on the tube so that each of the inductors remains centered on this weld bead.

3,824,367

INDUCTOR FOR INDUCTIVELY HEATING A ROTATING WORKPIECE

Norbert R. Balzer, Parma, and Larry G. Enk, Macedonia, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Aug. 13, 1973, Ser. No. 388,072
Int. Cl. H05b 9/02
U.S. Cl. 219—10.79 11 Claims



An improvement in a single shot inductor of the type used in heating the total length of an axle shaft as the shaft is rotating about its central axis. The normal single shot inductor includes two generally parallel conductors extending along the length

of the shaft and terminating in cross-over conductors at each end with one of the parallel conductors including a gap for accommodating input leads connected to an alternating current source. This basic inductor is improved by providing a conductor loop including at least one auxiliary conductor extending along the outer surface of the shaft between a first position adjacent one of the cross-over conductors and a second position adjacent the other cross-over conductor, with the auxiliary conductor being magnetically coupled to the surface. The conductor loop is connected in electrical series with one of the input leads of the normal single shot inductor so that the current flow within the auxiliary conductor provides an additional heating area in the rotating shaft.

3,824,368

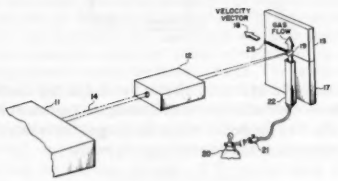
LASER WELDING

Edward V. Locke, Rockport, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 213,941, Dec. 30, 1971, abandoned. This application Jan. 11, 1973, Ser. No. 322,737

Int. Cl. B23k *9/00*

U.S. Cl. 219—121 LM **5 Claims**



A method of laser welding is described wherein a concentrated high power laser beam is moved along a workpiece surface at an interaction point where a flow of gas is introduced. It has thus been found that ordinarily a standing absorption cloud of ionized material is formed by the interaction of the high power laser energy and workpiece which then dissipates a large portion of the laser beam; however, when a gas is flowed across the interaction point, ionization is prevented and consequently substantially all of the laser beam is able to reach the workpiece resulting in an improved weld. The gas flow, therefore, operates to improve the metal working process by allowing the laser energy to pass uninhibited to the workpiece.

3,824,369

MANUFACTURING DEVICE FOR SHAFTS WITH SPHERICAL SHAFT ENDS

Wolfgang Hepp, Immenstaad; Klaus Pimiskern, Friedrichshafen, and Werner Herbert, Markdorf, all of Germany, assignors to Dornier Systems GmbH

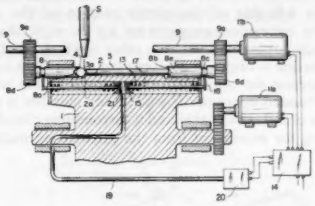
Filed June 25, 1973, Ser. No. 373,256

Claims priority, application Germany, Aug. 11, 1972, 2239619

Int. Cl. B23k *15/00*

U.S. Cl. 219—121 EB **10 Claims**

This invention relates to an apparatus for manufacturing shafts with spherical shaft ends, particularly shafts for pedestal bearings, comprising a horizontal conveyor drum means adapted to rotate in an indexing manner, a plurality of axially-extending groove means on the circumference of said drum means, means for placing shafts and balls to be connected into said grooves, a pair of relatively displaceable receiving shaft means for holding said shafts and balls together on said drum means while being connected, means for synchronously driving said receiving shaft means, and means for connecting said shafts and balls.



3,824,370

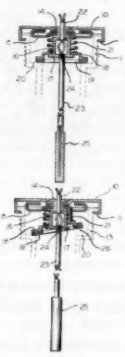
COMBINED RADIATOR CAP AND HEATER ASSEMBLY

Joseph A. Kucera, 18720 Parkview Dr., Brookfield, Wis. 53005

Filed June 9, 1972, Ser. No. 261,545

Int. Cl. H05b *3/78;* **F02n** *17/06*

U.S. Cl. 219—208 **5 Claims**



A combined radiator cap and heater assembly wherein the radiator cap comprises a top plate and a bottom plate separated by a resilient means, such as a spring which normally keeps the bottom plate biased away from the top plate. Power carrying electrical conductors pass through a ferrule in the top plate into a tubular means connected to the top plate. The tubular means has a flange thereon for movably securing the bottom plate thereto in a manner which enables the bottom plate to move longitudinally along said tubular means. A tube attached to the tubular means holds and extends a heater into the water in the radiator. The conductors pass through the tube to the heater.

3,824,371

GUN TYPE SOLDERING DEVICE WITH IMPROVED SOLDER WIRE FEEDING MECHANISM

David B. Schurman, Jr., 98 Morningside Path, East Weymouth, Mass. 02189

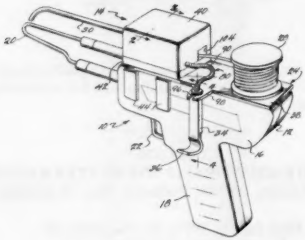
Filed Nov. 1, 1972, Ser. No. 302,675

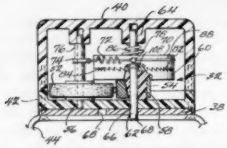
Int. Cl. H05b *1/00;* **B23k** *3/06*

U.S. Cl. 219—230 **13 Claims**

An electrical gun-type soldering device having a solder wire feeding mechanism preferably in the form of an attachment,

the feeding mechanism including an actuating member having a thumb engaging portion adapted to be selectively disposed in either one of two normally biased inoperative positions in one of which the thumb engaging portion is disposed adjacent the upper left side of the handle portion of the soldering device for convenient engagement by the right thumb of a right-handed operator and in the other of which the thumb engaging portion is disposed adjacent the upper right side of the handle portion for convenient engagement by the left thumb of a left-handed operator. The actuating member is mounted by means of a flexible cable and a surrounding closely wound coil spring for movement from the selected normally biased





inoperative position through successive operative cycles each of which includes a downward working stroke by a downward digital pressure of the thumb by the operator on the thumb engaging portion and an upward return stroke of the thumb engaging portion by release of the thumb pressure. The feeding mechanism also includes a pair of cooperating rollers mounted with their peripheries in cooperating relation to drivingly engage therebetween the intermediate portion of a solder wire extending from a supply spool and a ratchet mechanism for effecting an incremental rotational movement of at least one of the rollers in response to an operating cycle of the actuating member.

3,824,372

LOW VOLTAGE ELECTRIC BOILERS

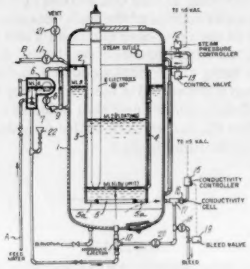
Milton Eaton, 363 Ninth St., Shawinigan, Quebec, Canada

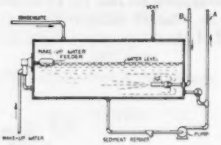
Filed Apr. 30, 1973, Ser. No. 355,707

Int. Cl. H05b *3/60*

U.S. Cl. 219—287 **8 Claims**

An electrode boiler in which the electrodes are enclosed in a steam generating compartment surrounded by a control compartment, the boiler load being controlled by transfer of boiler water between the steam generating and control compartments and the feedwater supply being regulated by means responsive to the water level in the control compartment referred to as the controlled water level. The improvement of the boiler of the present invention includes the use of a float-operated feedwater regulator made responsive to a reference water level having a delayed response to the controlled water level. The delay is obtained by the use of a throttling device located in the water communication between the reference and the controlled water levels. The boiler water conductivity control means for boilers operated at low voltage includes an external piped circuit in which the conductivity measuring device is located and through which boiler water is made to





flow by means of a hydraulic ejector located in the feedwater supply pipe. A conductivity control piping arrangement is also provided whereby the boiler water discharged for conductivity control is taken from the external piped circuit.

3,824,373

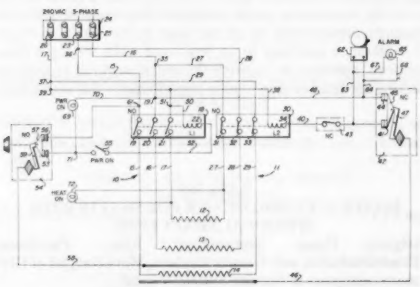
SAFETY CIRCUIT FOR DEEP FAT FRYER

Clarence H. Napier, 1316 E. Northshore Dr., Tempe, Ariz. 85281

Filed Oct. 29, 1973, Ser. No. 410,638

Int. Cl. H05b *1/02*

U.S. Cl. 219—494 **9 Claims**

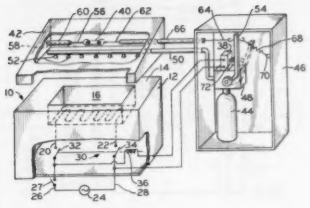


A safety circuit for deep fat fryers including a plurality of electric resistance heating elements, a first set of normally open spring-biased contact switches under the control of an adjustable thermostat, and a second set of normally open spring-biased contact switches, independent of said first set, and under the control of a fixed high-limit thermostat so as to interrupt the circuit to said heating elements in the event the contacts of the first set become stuck or frozen.

3,824,374
CONDITION RESPONSIVE DISCONNECT ARRANGEMENT FOR ELECTRICAL COOKING EQUIPMENT

Edward J. Mayher, 13672 Cherokee Trl., Middleburgh Heights, Ohio 44130

Continuation-in-part of Ser. No. 143,015, May 13, 1971, abandoned. This application May 10, 1973, Ser. No. 359,079
Int. Cl. H05b 1/02
U.S. Cl. 219—510 12 Claims

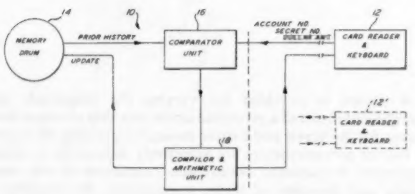


A condition responsive arrangement is provided which includes a normally closed safety control circuit in series with and between a thermostat element in an electric cooking range and a coil-controlled contactor through which the heating element of the range is energized. The thermostat, safety circuit and contactor are connected across a power source and the contactor operates when energized to connect the heating element across the power source. The safety circuit includes a normally closed switch located remotely of the range and actuated in response to a sensed abnormal condition exteriorly of the range to open the safety circuit and thus the electrical circuit to the coil-controlled contactor, thereby removing the heating element of the range from the power source.

3,824,375
MEMORY SYSTEM

Wilmer Gross, Philadelphia; Edwin S. Wydro, Levittown, both of Pa., and Charles W. Wood, Cherry Hill, N.J., assignors to Financial Security Systems, Inc., Philadelphia, Pa.

Filed Aug. 28, 1970, Ser. No. 67,717
Int. Cl. G06k 7/00
U.S. Cl. 235—61.7 B 30 Claims

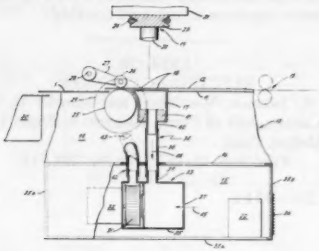


A memory system for simultaneously accessing a memory from a large number of sources includes a cyclic memory from which stored information is continuously read by a plurality of read means and temporarily entered into comparison registers, input registers receive and temporarily store at least one of the coded digits on said memory, and comparators generate a signal upon the existence of a coincidence between a coded digit momentarily in said comparator register and a coded digit temporarily stored in said input register. The existence of such coincidence is used to trigger arithmetic and logic units for further processing of the information.

3,824,376
DOCUMENT RESTRAINING AND READING APPARATUS

Ralph W. Fox, Blue Bell, Pa., assignor to Philco-Ford Corporation, Blue-Bell, Pa.

Filed May 10, 1973, Ser. No. 358,983
Int. Cl. G06k 7/02
U.S. Cl. 235—61.11 J 6 Claims

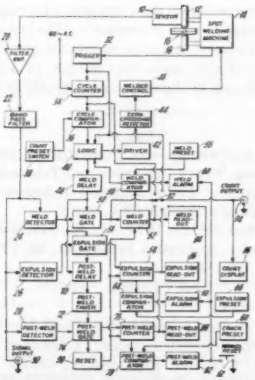


Document handling apparatus in which a document reader is disposed to scan indicia carried by a document occupying a perforated platform at the reading station. A vacuum manifold is cooperable with the perforations in said platform to reduce the pressure at the platform sufficiently to maintain the document in position to be scanned by the reader. A single blower serves several purposes, providing cooling air for electronic equipment included in the reader, and inducing the vacuum at the reading station which serves to keep the documents secured in proper position on the platform. Conduit structure, including first and second branches, is coupled with the blower to provide for drawing of air through said branches. One branch is connected to the vacuum manifold and the second branch presents sufficient restriction to insure that the blower induces, through the first branch, a pressure low enough to hold the document in position, while yet drawing sufficient air through the second branch and across the electronic equipment to cool the same. The output of the blower also is used to provide cooling air for the motor of apparatus which serves to remove documents from the platform.

3,824,377
ACOUSTIC EMISSION SPOT WELDING CONTROLLER

Kenneth R. Notvest, Ramsey, N.J., assignor to Trodyne Corporation, Teterboro, N.J.

Filed May 10, 1972, Ser. No. 252,111
Int. Cl. H03k 21/34
U.S. Cl. 235—92 PD 17 Claims



A system for detecting the acoustic emission emanating from a spot weld in which the emission from spot weld nugget

formation, weld expulsion and post-weld cracking are separately detected and converted to binary signals. The binary signals are accumulated and compared with pre-determined count levels. Means are provided to turn off the spot welding machine when the accumulated count indicates that the spot weld nugget has reached the desired volume. Means may also be provided to activate alarm signals if the weld nugget fails to reach the desired volume, or if the weld nugget suffers excessive expulsion or post-weld cracking.

3,824,378

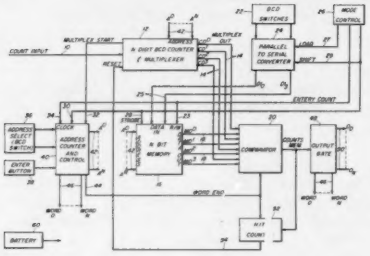
ELECTRONIC COUNTER

George W. Johnson, Woodbury, and Maurice D. Teichner, New Canaan, both of Conn., assignors to Presin Company, Inc., Shelton, Conn.

Filed Sept. 13, 1972, Ser. No. 288,518

Int. Cl. H03k 21/36

U.S. Cl. 235—92 PE **6 Claims**



A battery-sustained multiple level electronic counter is provided which includes an N-bit memory and an address counter and control for the memory. A single bank of a plurality of binary code decimal input switches are provided which are set for preset levels to be stored in the memory utilizing a much smaller number of address-select binary code decimal switches coupled to the address counter. The number of digits of the address-select switches corresponds to the number of preset levels desired to be measured. An N-digit binary code decimal counter and multiplexer is fed by the count input and coupled to a comparator which is also coupled to the memory. Signals are fed to the comparator from the binary code counter and multiplexer and the N-bit memory under the control of the address counter and control to provide an output when a preset level is hit. A hit counter is also provided which is coupled to the output of the comparator for resetting the binary code counter and multiplexer. The system can be modified using remote actuation so that the preset values cannot be tampered with, once they are set, or a single preset level can be utilized, or the system can operate as a totalizer.

3,824,379

VARIABLE FREQUENCY DIVIDING CIRCUIT

Norio Tomisawa; Yasuji Uchiyama, and Takatoshi Okumura, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoku-ku, Japan

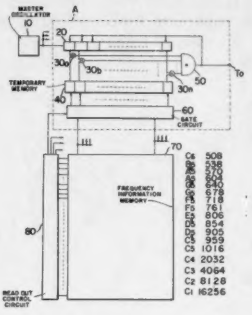
Filed Dec. 27, 1972, Ser. No. 319,064

Claims priority, application Japan, Dec. 30, 1971, 46-1500; Dec. 30, 1971, 46-1501

Int. Cl. H03k 21/36

U.S. Cl. 235—92 PE **1 Claim**

The output of each stage of a binary counter having a plurality of cascade-connected stages is connected to one input terminal of a corresponding coincidence circuit. A temporary memory is provided for storing a frequency dividing number n in the form of a binary information, and the output of each stage thereof is connected to another input terminal of the corresponding coincidence circuit. When the contents of the binary counter coincide with those of the temporary memory, the outputs of the whole coincidence circuits pass through an AND circuit to reset the binary counter, thereby constituting a ring counter with a scale of n. Therefore, the output frequency



of the AND circuit is $1/n$ of the input pulse. This dividing number n is variable in accordance with binary information to be stored in the temporary memory. The variable frequency dividing circuit of the type described above is applicable to a tone generator system for an electronic musical instrument.

3,824,380

DEVICE FOR VARYING THE THRUST OF A PIVOTABLE SCREW ON A SHIP

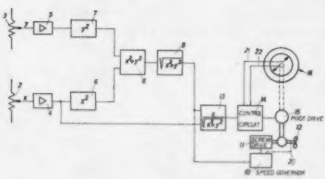
Harald Gross, Heidenheim, Germany, assignor to J. M. Voith GmbH, Heidenheim/Brenz, Germany

Filed Mar. 1, 1973, Ser. No. 336,913

Claims priority, application Germany, Mar. 4, 1972, 2210494

Int. Cl. G06g 7/70

U.S. Cl. 235—150.2 **4 Claims**

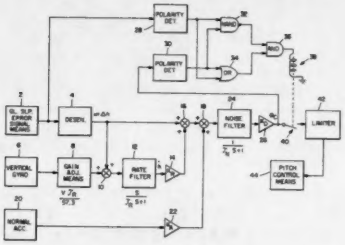


A device is provided for varying the magnitude and direction of thrust of a pivotable screw on a ship having a drive means for the screw and a drive means for pivoting the screw. A pair of potentiometers are selectively adjustable to values expressed in cartesian coordinates responsive to the magnitude and direction of thrust respectively. An amplifier is connected to the output of each of the potentiometers and an analog computer means having a plurality of stages is connected to the outputs of the amplifiers. The analog computer means includes a pair of squaring stages connected to the amplifiers, an adding stage connected to the outputs of the squaring stages, a square root stage connected to the output of the adding stage and a dividing stage connected to the output of the square root stage and the the output of the amplifier which has been adjusted to the x-coordinate value. The output of the square root stage is also connected to a governor or other structure for regulating the thrust of the screw and the output of the dividing stage is connected to a control circuit for the pivoting of the screw.

3,824,381
AIRCRAFT CONTROL SYSTEM USING INERTIAL SIGNALS

Frederic L. Swern, Succasunna, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed May 25, 1972, Ser. No. 256,897
Int. Cl. B64c *13/20*; G06g *7/78*
U.S. Cl. 235—150.22 14 Claims

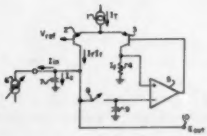


A system using inertial signals for controlling an aircraft to capture a radio beam. The system uses a shaped beam error signal and the inertial signals to provide a steering signal. The steering signal is filtered and the capture mode is engaged when the filtered signal has a polarity that causes the craft to fly parallel to the beam, whereupon the craft follows a path which is exponential with respect to the beam and symmetrical about beam center.

3,824,382
VECTOR GENERATOR

Wayne Lee Eshelman, Hillsboro, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Jan. 8, 1973, Ser. No. 321,875
Int. Cl. G06g *7/26*
U.S. Cl. 235—150.53 13 Claims

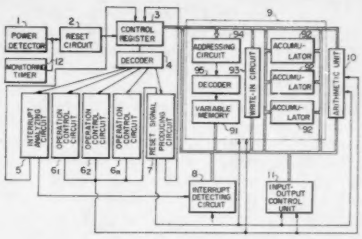


A vector generator provides a linear interpolation between points of a step function or dot waveform wherein the linear interpolation represents the vector sum of the time and amplitude components of the waveform. The vector generator comprises a sampling circuit, an integrator, and a feedback loop. Samples are taken at the appropriate times, setting up a differential current in the system. The differential current is integrated, producing a substantially linear voltage change from the first sample taken to a point at which the second sample is taken. By taking many samples, the vector generator can thus smooth a waveform produced by a digital-to-analog converter to produce a linear ramp from a staircase waveform, or even connect the dots of a dot display when such vector generators are used on both the vertical and horizontal axes.

3,824,383
DIGITAL CONTROL APPARATUS

Fumiyuki Inose, Kokubunji, and Hisashi Thuruoka, Ome, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1973, Ser. No. 333,154
Claims priority, application Japan, Feb. 18, 1972, 47-16464
Int. Cl. G05b *23/02*
U.S. Cl. 235—153 R 7 Claims

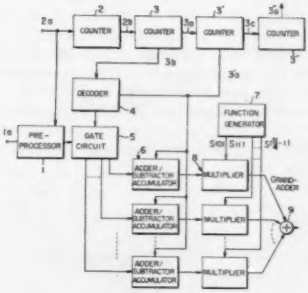


A digital control apparatus for repeatedly performing more than one processing, having combinational circuits (read-only memories) which nondestructively store the sequences of processings and the value of constants required for the processings, and reset means for resetting to a predetermined condition prior to carrying out the processing the contents of sequential circuits in an arithmetic unit for carrying out the processings, the contents of memory means for storing intermediate information of the processing, and the contents of an input-output control unit thereby eliminating the affects of intermittent errors.

3,824,384
FREQUENCY ANALYZER FOR ANALYZING A TIME FUNCTION OF A QUANTITY

Yutaka Murata, and Sigeru Izumi, both of Tokyo, Japan, assignors to Hitachi, Ltd. and Murata Yutaka, both of Tokyo, Japan

Filed Mar. 9, 1972, Ser. No. 233,029
Claims priority, application Japan, Sept. 9, 1971, 46-69925; Apr. 19, 1971, 46-24488
Int. Cl. G06f *15/34*
U.S. Cl. 235—156 5 Claims

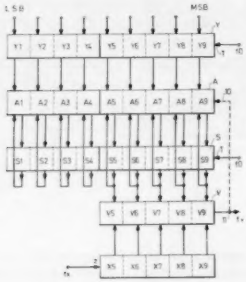


A frequency analyzer comprising a pre-processor, gates, adder-subtracters, a function generator, multipliers and a grand adder. An analog signal representative of a function of time $f(t)$ of a quantity to be analyzed is applied to the pre-processor, thence through the gates to the adder-subtracters. The function generator generates a trigonometric function which is applied to the multipliers to be multiplied by the outputs of the adder-subtracters, and the outputs of the multipliers are applied to the grand adder.

3,824,385
DIGITAL DIVIDER CIRCUIT

Uwe Kiencke, Moglingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 10, 1973, Ser. No. 405,143
Claims priority, application Germany, Oct. 28, 1972, 2253006
Int. Cl. G06f 7/52
U.S. Cl. 235—150.3 16 Claims

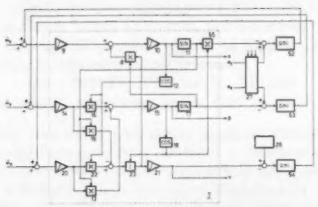


The frequency of an input pulse train serves as the dividend and operates a first counter in continuously repeated cycles. The divisor is stored as a binary number in a divisor register and, by means of an adder, the divisor and successive integral multiples thereof are successively registered in a summing register at intervals determined by the operation of a comparator which compares the more significant digits of the summing register with all of the lower integral multiple of the divisor, the adder or the summing register is advanced to present the next higher multiple. The succession of output pulses of the comparator provide a pulse train the frequency of which is the quotient. The divisor may be generated by a pulse train and periodically registered, either as a number proportional to the period of the pulse train or a number proportional to the frequency of the pulse train. The divisor register, adder and summing register have additional places for less significant bits in excess of the number of places in the first counter, enabling great reduction in the maximum rounding error.

3,824,386
APPARATUS FOR DETERMINING THE MOMENTARY TILT OF A VEHICLE OR CRAFT

Rienk Pieter Offereins, Wilmskamp, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Apr. 26, 1973, Ser. No. 354,672
Claims priority, application Netherlands, May 4, 1972, 725986
Int. Cl. G06g 7/78
U.S. Cl. 235—150.27 5 Claims

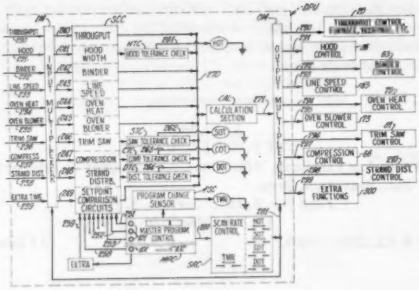


An apparatus for determining the momentary tilt of a moving vehicle or craft is provided with two translational accelerometers mounted rigidly on or in the vehicle or craft. The output signals of the accelerometers determine the acceleration components (a_x, a_y) in two, mutually perpendicular, axial directions (x, y) situated in a plane horizontal with respect to the vehicle or craft. From said output signals the low frequency components of two of the three angles (α, β) defining the momentary tilt are obtained by employing, amongst others, a low-pass filter available for the two signals. The low-frequency components of the third angle (γ) defining the momentary tilt are derived, via a low-pass filter, from a signal which is supplied by a compass and indicates the azimuth position of the vehicle or craft. The apparatus is furthermore provided with three angular accelerometers also mounted rigidly on or in the vehicle or craft, of which accelerometers the output signals determine the angular acceleration (ω) which said vehicle or craft is experiencing with respect to its centre of gravity. From said output signals the high frequency components of the three angles (α, β, γ) defining the momentary tilt are obtained by using a high-pass filter, available for each of these signals, and a (first) computing device.

3,824,387
METHOD AND APPARATUS FOR CONTROL OF CONDITIONS IN A PROCESS

John M. Garst, Blacklick, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Jan. 3, 1972, Ser. No. 215,048
Int. Cl. G06f 15/46
U.S. Cl. 235—151.1 28 Claims

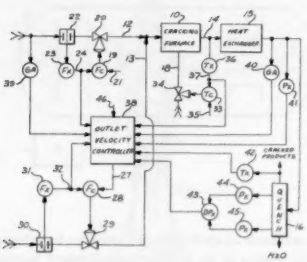


An embodiment described herein comprises apparatus for manufacturing a glass fiber mat which includes means for providing glass fibers at a deposition station, movable collecting surface means arranged to receive fibers at the deposition station, means for depositing glass fibers along the collecting surface including means for driving the movable collecting surface past the deposition station, and data processing means for controlling the variables of the glass fiber providing and depositing means to provide a mat-like mass of fibers on a collecting surface with predetermined uniform characteristics. A plurality of control loops provide data on the actual condition of each variable being monitored and controlled. The data supplied by each control loop is scanned by a scanning means having a plurality of selectable different scanning rates. The scanned actual condition data of each control loop is compared with setpoint data representing a desired condition for the variable of that loop. A selection means is responsive to the comparing means and selects a first slower scanning rate for at least one of the control loops in response to substantial agreement between actual and setpoint data in the comparing means. In response to a predetermined difference in the comparing means between actual and setpoint data of the one control loop a second faster scanning rate for the scanning means is selected for the one control loop.

3,824,388
HYDROCARBON CRACKING SYSTEM

John C. Cugini, 9 Penlaw Rd., Lawrenceville, N.J. 08648

Filed June 26, 1972, Ser. No. 266,208
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.12 33 Claims

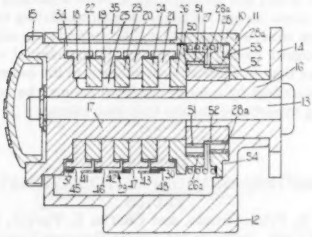


Operation of a hydrocarbon cracking furnace is controlled automatically by utilizing various types of equipment to control the flow to the furnace of hydrocarbon feed gas, a mixing gas such as steam, and furnace fuel in such manner as to increase the yield of desirable cracked products while simultaneously operating the furnace closer to its limiting conditions and increasing the amount of furnace on-line time. This is accomplished by monitoring numerous furnace operating parameters to provide data which is used to automatically control equipment which results in controlling the furnace outlet gas velocity in a predetermined desired manner. The system provides for automatic control of furnace outlet gas velocity by controlling the flow of any one or more of the hydrocarbon feed gas, the mixing gas such as steam, or the furnace fuel in an automatically controlled sequence of operations. Equipment and operator-set limiting conditions are imposed on the system and the latter can be changed as desired.

3,824,389
COUNTERS

John Benjamin Leslie Walters, Walsall, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed June 20, 1973, Ser. No. 371,694
Claims priority, application Great Britain, June 24, 1972, 29720/72
Int. Cl. G06c *15/26, 15/42*
U.S. Cl. 235—117 R 8 Claims

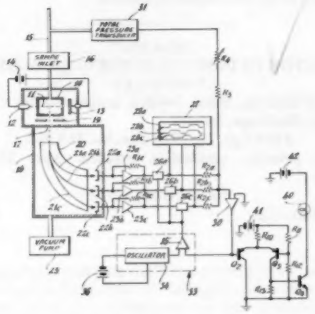


A counter comprises a body housing a set of discs which are freely rotatable on a sleeve and which have numerals on their peripheries. A series of drive plates are keyed to the sleeve and interleaved with the discs. At one end of the set of discs a spring-loaded collar also keyed to the sleeve urges the drive plates and discs into frictional engagement. The sleeve is rotatable with a reset wheel whilst the collar is driven by a star counting wheel through an orbital drive arrangement. Each disc has a set of first abutments and a second abutment on its periphery. Spring blades engage the peripheries of the discs to engage the first abutments so as to oppose movement of the discs in a counting direction but to permit movement thereof in a reset direction. The spring blades associated with all the discs but one end disc are each provided with a resilient detent which is positioned in the path of movement of the second abutment on a disc adjacent that engaged by the associated first abutment.

3,824,390
MULTICHANNEL MASS SPECTROMETER

John J. Magyar, Arcadia, Calif., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Oct. 18, 1971, Ser. No. 190,223
Int. Cl. H01j *39/34*
U.S. Cl. 250—294 9 Claims



This is a multichannel mass spectrometer in which gas components of a mixture sample are ionized and the ions directed respectively to different collector cups or plates to generate voltage signals corresponding to the ion currents collected. Means are provided for initially adjusting the voltage of the output signals so that each collector output circuit produces the same signal as the others at unit partial pressure of the gas component it is adapted to measure. A reference signal is supplied and means is provided for comparing it with the sum of the collector circuit output voltages. Sensitivity control means is responsive to changes in the initially adjusted relationship of the sum of the collector output signals to the reference signal and adjusts each of the collector output signals by the same factor to maintain the sum of the collector signals in the initial adjusted relationship. Thus the collector signals will be proportional to the respective gas component partial pressures despite variations in the relative proportions of the component partial pressures, and despite changes in factors which would otherwise alter the sensitivity of the spectrometer system. Detector means is also provided to indicate an excessive change in the sum of the collector signals due to restriction of the sample inlet conduit or other unusual condition.

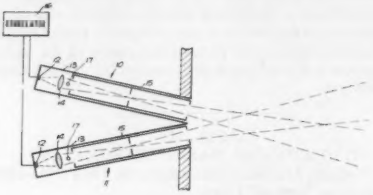
3,824,391
METHODS OF AND APPARATUS FOR FLAME MONITORING

Bernard Edward Noltingk, Dorking, and Norman Edgar Robinson, Croydon, both of England, assignors to Central Electricity Generating Board, London, England

Filed May 21, 1973, Ser. No. 362,546
Int. Cl. H01j *39/12*
U.S. Cl. 250—208 10 Claims

For monitoring each individual flame in a multi-burner furnace, two optical light receiving systems each have a photo-

sensor on which is focused a narrow beam, the two beams intersecting at a small angle in or near the flame to be monitored. The angular beam widths are less than the angle of intersection. The alternating electrical signals from the photo-



sensors due to flicker components in the flame are correlated in a correlator which determines the degree of correlation whereby the presence or absence of a flame in the intersection region only of the two beams is detected.

3,824,392

DETECTOR TO INDICATE BURNING OR GLOWING PARTICLES

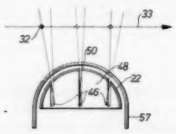
Kurt Eskil Tibbling, Solna, Sweden, assignor to Pak Construction AB, Huddinge, Sweden

Filed Apr. 23, 1973, Ser. No. 353,313

Claims priority, application Sweden, Apr. 24, 1972, 5380/72

Int. Cl. G08b *17/12*

U.S. Cl. 250—221 **5 Claims**



A detector to be utilized in processes where inflammable material is transported in conduits at a high speed. Then the detector will indicate glowing particles, as sparks and fire flakes, which may appear within a risk zone or are rapidly being transported through such a zone. Said detector includes a transducer suitable disposed within the system, as on the tube wall of a transport conduit. Said transducer gives signals in the form of a pulse train when such a particle passes through the visual field thereof.

3,824,393

SYSTEM FOR DIFFERENTIAL PARTICLE COUNTING

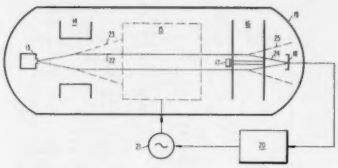
Alfred E. Brain, Santa Cruz, Calif., assignor to American Express Investment Management Company, San Francisco, Calif.

Continuation of Ser. No. 174,936, Aug. 25, 1971, abandoned, which is a division of Ser. No. 44,503, June 6, 1970, abandoned. This application Oct. 1, 1973, Ser. No. 402,656

Int. Cl. H01j *39/12*

U.S. Cl. 250—222 PC **4 Claims**

A system for differentiating and counting particles and in particular nucleated particles such as white blood cells. The presence in the field of view of a particle of the type to be differentiated and counted is detected and an image of the field scanned by a television camera. An analog to digital converter samples the television camera output to provide a digital data representation of the intensity of a sampled field of picture elements of predetermined resolution. The digital data is processed by a digital computer including a memory for storing the sampled field of picture elements. Picture elements corresponding to a particle to be analyzed are circumscribed by box-finding algorithms and digital data corresponding to picture elements enclosed by the box are analyzed for parameters used in identifying the particle. Particles are identified by



a distance measure or criterion of closeness to selected prototype particle points in an n dimensional space according to a preselected set of n parameters. Focus is automatically preserved during microscope imaging of a specimen passed beneath the microscope objective to insure reliable data for processing.

3,824,394

ATOMIC BEAM RESONATOR HAVING A CONFOCAL CONICS FIELD GEOMETRY IN THE SECOND STATE SELECTOR

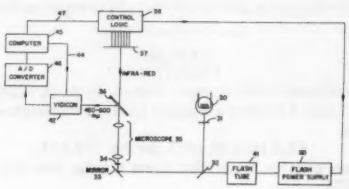
Peter Kartaschoff, Poudrieres 43, Neuchatel, Switzerland

Filed Jan. 30, 1973, Ser. No. 328,087

Claims priority, application Switzerland, Feb. 15, 1972, 2110/72

Int. Cl. G01n *27/78;* **H01s** *1/00*

U.S. Cl. 250—251 **4 Claims**



An atomic beam resonator having a source for producing the beam, a first and second state selector separated by an interaction zone, means for generating an oscillating field in the interaction zone, and a detector. The second state selector is a dipole magnet having pole pieces of trapezoidal shaped in such a way that, in a plane perpendicular to the beam axis, the field is described by a set of confocal conics, the equipotentials being hyperbolae and the field lines ellipses.

3,824,395

RADIOMETRIC ASSAY OF PARTICULATE MATTER IN FLUIDS

Bernard A. Fries, Orinda, and Charles K. Parker, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

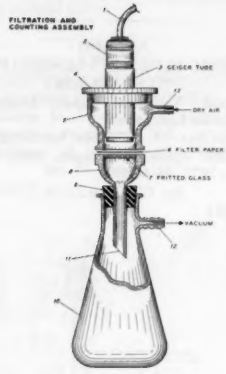
Filed Jan. 28, 1972, Ser. No. 221,664

Int. Cl. G01t *1/18*

U.S. Cl. 250—308 **6 Claims**

A porous filtering medium is rendered radioactive by incorporation of a radioactive isotope within it, or by coating it with an insoluble radioactive isotope, having weakly penetrating radiation. This source of radioactivity is first counted. The

fluid to be assayed is then filtered through the filtering medium and the attenuation of radiation due to collected solid



material is proportional to the amount of particulate matter in the filtered fluid. The method may be automated and assays made continuously.

3,824,396

METHOD AND APPARATUS FOR CHECKING POSITIONS OF BOTTOM END WALLS OF BLIND HOLES FORMED IN A PART AND IN PARTICULAR IN A GRAPHITE BLOCK

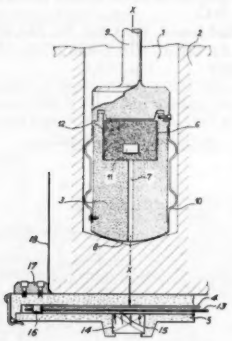
Jean-Louis Boutaine, Le Chesnay; Roko Bujas, and Jean Tortel, both of Gif-sur-Yvette, all of France, assignors to Commissaritat a l'Energie Atomique, Paris, France

Filed May 18, 1973, Ser. No. 361,426

Claims priority, application France, May 31, 1972, 72.19564

Int. Cl. G01b *15/00*

U.S. Cl. 250—312 **6 Claims**



The positions of the axes of cylindrical blind holes bored in parallel relation in a block of solid material such as graphite are checked by directing a parallel and narrow beam of X-ray or gamma-ray photons along the axis of each blind hole towards the bottom of the hole. An inspection unit consisting of radiation-sensitive photographic film and placed outside the block opposite to the blind holes is employed in order to make a comparison between the points of intersection of the different beams with the inspection unit and the locations of the theoretical zones of tolerance which are traced on the film by means of beta-ray sources through a perforated mask which is positioned with high precision with respect to the block.

3,824,397

DEVICE FOR X-RAY PHOTOGRAPHY, IN PARTICULAR FOR MAMMOGRAPHY

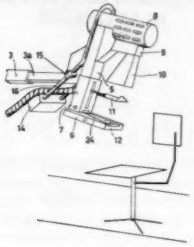
Manfred Bauer; Gerhard Hellberg, and Friedrich Reiniger, all of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 3, 1972, Ser. No. 250,071

Claims priority, application Germany, May 11, 1971, 2123151

Int. Cl. G03b *41/16*

U.S. Cl. 250—320 **5 Claims**



An X-ray photography device for mammography, including a support which is connected to a telescopic horizontal arm, is rotatable about the axis of the arm, and also is tiltable about an axis which is perpendicular to the arm.

3,824,398

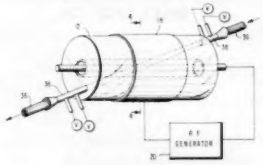
METHOD FOR PLASMA TREATMENT OF SUBSTRATES

Abraham A. Boom, Martinsville, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 171,282, Aug. 12, 1971, Pat. No. 3,723,289. This application Sept. 26, 1972, Ser. No. 292,348

Int. Cl. G01n *23/00*; **H01j** *37/00*

U.S. Cl. 250—325 **3 Claims**



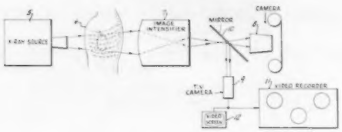
A method and apparatus for efficiently generating a gaseous plasma particularly for the treatment of substrates. A radio frequency electrical signal is applied to two electrodes disposed exteriorly of an electrically insulative, gas impervious envelope. A central passage extends into the envelope and one electrode is disposed in the central passage. The electrodes are separated at least in part by the envelope and the radio frequency signal applied to the electrodes excites the gas within the envelope to thereby generate a gaseous plasma therein. The gas conditions within the envelope differ from the gas conditions exteriorly thereof and the amplitude of the radio frequency signal is insufficient to generate a plasma out-

side the chamber defined by the envelope. Since the plasma does not contact the electrodes, efficiency is maximized and the plasma is not contaminated by the electrodes. In addition, the surface areas of the electrodes differ substantially thereby creating a plasma within the envelope which varies in concentration in a predetermined manner, with the concentration being greatest near the center of the envelope. A substrate may therefore be contacted by varying plasma concentration as it passes through the envelope and the outer wall of the envelope is not contaminated by the plasma. A vacuum lock for preventing gas leakage into the envelope is also disclosed.

3,824,399
METHOD OF IN VIVO EXAMINATION OF ORGAN FUNCTIONS

Lars Bjork, and Uno Erikson, both of Saab Scania Aktiebolag, Linkoping, Sweden

Continuation-in-part of Ser. No. 110,184, Jan. 27, 1971, abandoned. This application July 5, 1973, Ser. No. 376,796
Int. Cl. G01t *1/16*
U.S. Cl. 250—336 **2 Claims**

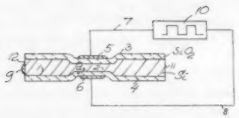


A known quantity of X-ray-opaque tracer is injected into blood entering an organ to be examined. X-rays are passed through the organ to an imaging plane. Image records are made periodically through a cycle of the organ. Selectively delineated image areas of each record of interest are scanned to produce a signal corresponding to blackness variations across the image. The signal is so amplified as to produce an output that varies with tracer concentration across the projected area of the organ. Integrating that output for each record provides a final output representative of tracer concentration in the delineated organ portion.

3,824,400
INDUCED CHARGE TRANSFER DEVICES

Kurt Lehovec, 11 Woodlawn Dr., Williamstown, Mass. 01267

Continuation-in-part of Ser. No. 861,021, Sept. 25, 1969, abandoned, which is a continuation-in-part of Ser. No. 703,958, Feb. 8, 1968, Pat. No. 3,473,032. This application Sept. 27, 1972, Ser. No. 292,694
Int. Cl. G02f *1/28*
U.S. Cl. 250—552 **4 Claims**

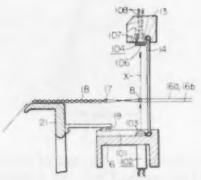


Electric devices which comprise an induced mobile charge in a semiconducting layer facing a mobile charge of opposite polarity across a semi-insulating layer. The positions of these charges are shifted simultaneously. In one embodiment of the invention said charges are induced on opposite surfaces of a thin semiconducting layer through insulators by means of applied potentials and said semi-insulating layer is a depletion space charge layer in the semiconductor between said opposite surfaces, the induced charges exchanging positions by reversal of the applied potentials. In another embodiment one of said mobile charges is a Gunn domain which induces the mobile charge of opposite polarity through a semi-insulating film of the Gunn device material, said charges shifting parallel to each other along said semi-insulating film.

3,824,401
PHOTOELECTRIC TYPE WEFT SENSING PROCESS AND WEFT SENSOR

Toshiyuki Suzuki, Nara-ken, Japan, assignor to Enshu Limited, Skizuoka-ken, Japan

Filed Nov. 14, 1972, Ser. No. 306,206
Claims priority, application Japan, Nov. 16, 1971, 46-92050; Nov. 16, 1971, 46-92051
Int. Cl. G01n *21/30*
U.S. Cl. 250—561 **30 Claims**

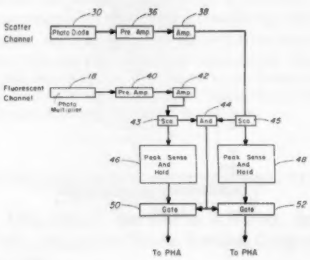


Interception of light, which is emitted by a light emitter positioned on one vertical side of the warp sheet, by the weft at the moment of picking motion is sensed by a light receiver positioned on the other vertical side of the warp sheet while cutting off luminous noises by the warp sheet and, after the photoelectric conversion, corresponding electric signals are given to a discrimination circuit so that the absence of weft at the time of the picking motion will cause instant interruption of the loom running.

3,824,402
DUAL PARAMETER FLOW PHOTOMETRIC APPARATUS AND METHOD

Paul F. Mullaney, and William T. West, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Energy Commission, Washington, D.C.

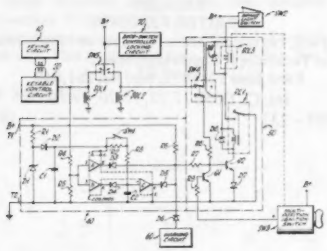
Filed June 4, 1973, Ser. No. 366,892
Int. Cl. G01n *21/26*; **G03b** *27/32, 27/60*
U.S. Cl. 250—565 **1 Claim**



A photometric apparatus and method for measuring light responsive characteristics of appropriately stained biological cells. At least two light responsive characteristics are measured and compared to eliminate spurious light induced noise. More particularly, light scattering produced by the cells and fluorescent light emitted by the cells in response to an incident

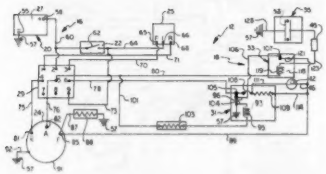
light beam are detected. Electrical signals are produced in accordance with such fluoresced and scattered light. The fluorescence and scattering signals are then compared to one another to eliminate from an output signal fluorescence signals produced from spurious fluorescence in the solution carrying the cells or debris and scattering signals from scattering produced by cellular debris.

3,824,403
POWER CONTROL CIRCUIT FOR AUTOMATIC VEHICLES AND THE LIKE
Francis A. McGuirk, Jr., Chatham, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.
Filed Sept. 15, 1972, Ser. No. 289,283
Int. Cl. B60r *25/04*
U.S. Cl. 307—10 AT **10 Claims**



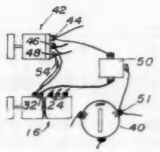
A power control circuit operative to enable start-up of a vehicle engine in response to a predetermined sequence of events. Upon opening one or more doors by means of a keying circuit actuating a keyable control circuit, a control signal is provided to a timing circuit which in turn provides an enabling signal to an enabling circuit for a predetermined period of time during which engine start-up may be effected by depressing the brake pedal and subsequently actuating the ignition switch. The timer output and the actuation of the brake pedal switch cause energization of a solenoid which normally prevents actuation of the ignition switch. Energization of this solenoid enables actuation of the ignition switch, which in turn mechanically prevents the solenoid from preventing further actuation of the ignition switch after the solenoid is again deactuated upon either expiration of the enabling signal or deactuation of the brake light switch.

3,824,404
VEHICLE POWER OUTPUT MEANS
Leonard R. Ghere, 256 S. Florence, Wichita, Kans. 67209
Filed Apr. 3, 1973, Ser. No. 347,434
Int. Cl. H02j *1/00*
U.S. Cl. 307—10 R **10 Claims**



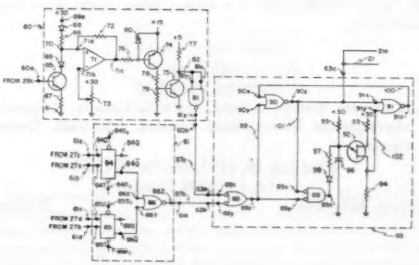
This invention relates to a power output means for conversion of the regulator alternator electrical system of a vehicle to supply electrical power for the operation of lighting fixtures, hand tools, etc. The power output means is connected to the normal vehicle ignition means being a battery power supply, ignition switch, an alternator, an a regulator with the invention herein being a power converter means including a master switch means connected to a voltage control assembly and a current control assembly to achieve a power output at an output receptacle whereby the invention is operable to control the voltage and amperage output regardless of the vehicle engine speed.

3,824,405
AUTOMATIC WIPER AND LIGHT CONTROL
Thurman A. Glaze, 9704 Tokomah Trl., Tampa, Fla. 33617
Filed June 1, 1973, Ser. No. 365,858
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 LS **3 Claims**



A system is provided for automatically turning on head and tail lights of a motor vehicle when the vehicle windshield wipers are turned on. However, when the ignition switch is in other than the normal "On" position, the windshield wipers may be operated without the lights on, as when watching a drive-in movie in the rain.

3,824,406
PHASE RESPONSIVE CONTROL CIRCUIT
Charles W. Ellis, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio
Division of Ser. No. 152,770, June 14, 1971, Pat. No. 3,723,888. This application Jan. 29, 1973, Ser. No. 327,292
Int. Cl. H03k *5/20*
U.S. Cl. 307—87 **3 Claims**



A circuit for establishing and controlling a synchronous relationship between the voltages of two independently energized a-c sources. Two a-c voltages are applied in switching control relationship to respective inputs of a phase comparator circuit. The comparator circuit generates a pulse train having a duty cycle which is a substantially linear function of the phase angle between the voltages of the two a-c sources. A reference pulse train having a fixed duty cycle is subtracted from the variable duty cycle pulse train to establish a signal voltage that varies in accordance with the magnitude and sign of the phase angle between the voltages of the two a-c sources. When the frequency of one a-c source is within acceptable

frequency limits, the above signal voltage is allowed to vary the frequency of the other a-c source, as required, to maintain a synchronous relationship between the voltages of the two a-c sources. When, however, the frequency of one a-c source varies outside of acceptable frequency limits, the above signal voltage is prevented from varying the frequency of the other a-c source which then operates at a fixed, predetermined frequency.

3,824,407

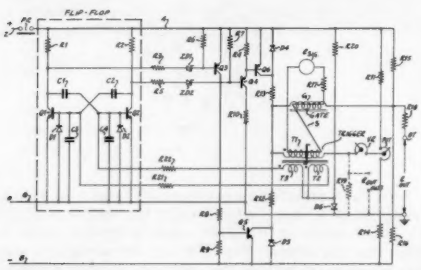
DIRECT CURRENT SIGNAL ISOLATOR PROVIDING A CLOSE REPLICA OF WAVE SHAPE

Robert L. Risberg, Brookfield, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Mar. 15, 1973, Ser. No. 341,564

Int. Cl. H02m *5/10*

U.S. Cl. 307—88 MP **11 Claims**



A circuit providing information regarding the magnitude and polarity of signals in an electrical system. The signals may be A.C., D.C., asymmetrical, or of a pulse nature. A flip-flop drives a saturable reactor "trigger" winding alternately with opposite voltage polarities, and pulses generated by the saturation phenomenon of the trigger reactor control the flip-flop to reverse the voltage upon saturation. A second non-saturating reactor "gate" winding, not magnetically coupled to the saturating core, is also driven by the flip-flop on a minor hysteresis loop. A D.C. input signal winding is wound simultaneously on both cores. The output signal is obtained from the "gate" winding and is a close replica of the input signal wave form.

3,824,408

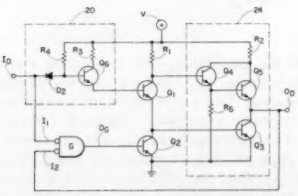
DRIVER CIRCUIT

L. E. Andre Brunel, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada

Filed July 20, 1973, Ser. No. 381,257

Int. Cl. H03k *19/40*

U.S. Cl. 307—214 **25 Claims**



A high speed inverting driver circuit, having a pair of serially arranged bipolar transistors in its output stage, for providing an interface between low level logic signals and a load. During operation of said driver circuit a logic gate, which is coupled to the base electrode of a bipolar transistor switch bridging the base and emitter electrodes of one transistor in the output stage, compares the voltage signals appearing at the input and output terminals of the driver circuit. If, due to slow turn OFF of said one transistor in the output stage, said voltage signals are simultaneously at their logical "0" level (ground potential), the bipolar transistor switch is turned ON by a signal from the logic gate, and the base and emitter electrodes of said one transistor of the output stage are effectively joined. By joining the base and emitter electrodes via the transistor switch, as aforesaid, charge stored in the base region of said one transistor in the output stage is rapidly depleted and the turn OFF time of said one transistor thereby greatly reduced.

3,824,409

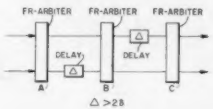
ARBITER CIRCUITS

Suhas S. Patil, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed June 12, 1972, Ser. No. 261,849

Int. Cl. H03k *17/28, 17/30, 19/20*

U.S. Cl. 307—232 **10 Claims**



An infinite resolution electronic arbiter circuit is described which provides a signal at one of its outputs within a known time with a very small possibility that a signal also appears on its other output. Finite resolution arbiter circuits are cascaded with a delay element interposed between one arbiter output and the input of the other to provide an arbiter circuit having infinite resolution. Finite resolution arbiter circuits are shown constructed from both C and C′ circuits.

3,824,410

FREQUENCY TO VOLTAGE CONVERTER WITH MEANS FOR PRESCRIBING PULSE WIDTH AGAINST FLUCTUATIONS

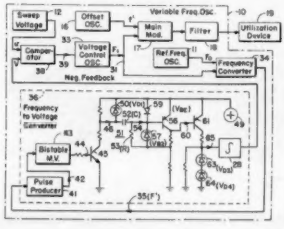
Hidefumi Funaki; Toshiaki Tanaka; Katsuyoshi Nakajima, and Yuichi Kanda, all of Tokyo, Japan, assignors to Nippon Electric Varian, Ltd., Tokyo, Japan

Filed June 20, 1972, Ser. No. 264,449

Claims priority, application Japan, June 21, 1971, 46-44587; Apr. 18, 1972, 47-38312

Int. Cl. H03k *5/00*

U.S. Cl. 307—233 **3 Claims**



In a frequency to voltage converter, the height of pulses produced in response to the respective cycles of the input

signal is stabilized by prescribing the pulse levels with reference to ground and by compensating for the temperature dependency of the characteristics of the circuit elements. Furthermore, the pulse width is prescribed by a predetermined number of cycles of a crystal controlled oscillation. A high gain feedback loop including the converter and a voltage controlled crystal oscillator serves to sweep the frequency of the voltage controlled oscillation in linear proportion to the sweep voltage applied to the loop and to phase synchronize the oscillation with respect to a reference oscillation supplied to the loop. The frequency swept oscillation is applicable to a nuclear magnetic resonance analyser without the offset oscillation.

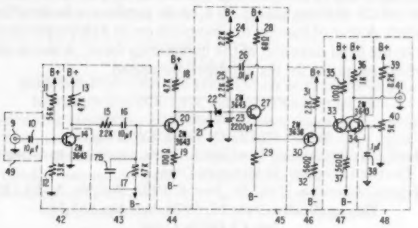
3,824,411
PULSE DELAY CIRCUIT

James Hugh Wharton, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 264,363, June 19, 1972, abandoned. This application July 2, 1973, Ser. No. 375,379

Int. Cl. H03k *1/12, 5/159*

U.S. Cl. 307—262 **6 Claims**



A delay circuit for delaying a pulse or a series of pulses of different widths. The circuit delays the leading and trailing edges of an input pulse for respective first and second time delays. The delay of the trailing edge of the input pulse is not dependent upon the width of the input pulse, thus allowing pulses of different widths to pass through the delay circuit and have their respective leading and trailing edges delayed.

3,824,412
CIRCUIT ARRANGEMENT FOR THE PHASE ADJUSTMENT OF A PAL SWITCH

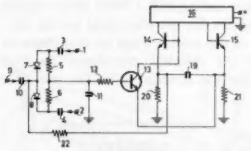
Klaus Kroner, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 91,658, Nov. 23, 1970, abandoned. This application Aug. 30, 1972, Ser. No. 285,025

Claims priority, application Germany, Dec. 19, 1969, 1963820

Int. Cl. H03k *3/282, 5/153*

U.S. Cl. 307—269 **3 Claims**



A PAL TV receiver has a multivibrator switching at one half of the line frequency and a circuit for stopping the switching operation if a PAL switch is out of phase with the chroma burst. A capacitor circuit is provided for releasing the stopping circuit so that the switch does not stop switching for too long a period.

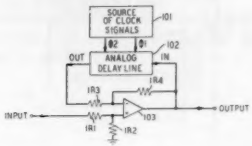
3,824,413
ANALOG FEEDBACK FREQUENCY RESPONSIVE CIRCUIT

Mebenin Awipi, Ocean; Sotirios Constantine Kitsopoulos, Summit, and Donald Steven Levinstone, Bayonne, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 16, 1973, Ser. No. 333,327

Int. Cl. H03k *1/16*

U.S. Cl. 307—295 **29 Claims**



An active analog delay line is utilized as a feedback element to develop output signals as a function of frequency. The analog feedback delay element is arranged to accept the output signals, sample those signals at a periodic clock rate, and to serially pass the sampled signal from stage to stage in order to achieve the amount of delay desired. The output of the delay device is then summed with an input signal to provide a new output signal. The circuit is useful as a sample delay recursive comb type filter and as a selectively controllable oscillator.

3,824,414
SECONDARY MEMBER FOR SINGLE-SIDED LINEAR INDUCTION MOTOR

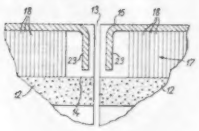
Eric Roberts Laithwaite, Long Ditton, and Thomas George Fellows, Barnet, both of England, assignors to Tracked Hovercraft Limited, London, England

Filed Mar. 13, 1973, Ser. No. 340,721

Claims priority, application Great Britain, Mar. 15, 1972, 12073/72

Int. Cl. H02k *41/02*

U.S. Cl. 310—13 **7 Claims**



The secondary of a single-sided, short-stator linear induction motor is formed in sections, for example, with expansion joints between sections. At the discontinuities, the ends of the reaction plate are turned down to provide return paths for circulating induced currents in the vicinity of the discontinuities.

3,824,415
APPARATUS EQUIPPED WITH A SINGLE-PHASE SYNCHRONOUS MOTOR AND A STARTING COUPLING

Bernard Joseph Beusink, Clementinalaan, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 12, 1973, Ser. No. 414,979

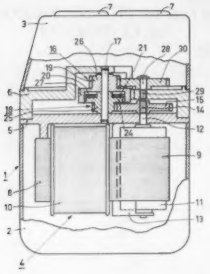
Claims priority, application Netherlands, Nov. 28, 1972, 7216084

Int. Cl. H02k *7/118*

U.S. Cl. 310—41 **2 Claims**

Electrical appliance, equipped with a singlephase synchronous motor and a starting coupling with fly weights.

Measured from the axis of rotation of the starting coupling, the angle between the axis of rotation of a fly weight and the points where the fly weight frictionally cooperates with the



driven coupling section, is between 150° and 180° and the angle between the said axis of rotation and the centre of gravity of the fly weight is substantially 90°.

3,824,416

VIBRATION-DAMPED BRUSH ASSEMBLY FOR USE IN A SMALL DYNAMOeELECTRIC MACHINE

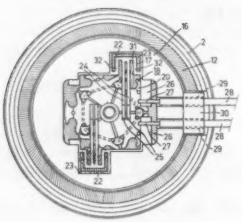
Jan Maarten van de Griend, Dordrecht, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 20, 1972, Ser. No. 290,473

Claims priority, application Netherlands, Sept. 30, 1971, 7113387

Int. Cl. H02k *5/24*

U.S. Cl. 310—51 **4 Claims**



A small electric machine, such as a motor or a tachogenerator, which employs a commutator and a brush assembly, in which the undesirable vibrations of the brushes with respect to the commutator are damped by damping means. The preferred damping means comprises amounts of a plastic deformable putty-like damping material, for example on the basis of polyvinylacetate. This material is provided at the locations of the brushes. The damping material adheres both to the brush and to the fixed parts of the machine. To reduce contact noise, plate-shaped brushes having leaf-spring-like brush elements preferably are formed with long parts which are in contact with the damping material. This may be effected with little loss of space by connecting the leaf springs to a brush support via parts which extend on both sides of the leaf springs parallel therewith.

3,824,417

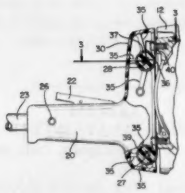
HANDLE MOUNTING CONSTRUCTION FOR ELECTRIC PAVING BREAKER

Robert Gordon Moores, Jr., Cockeysville, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Mar. 19, 1973, Ser. No. 342,868

Int. Cl. H02k *5/24*

U.S. Cl. 310—51 **2 Claims**



An electric paving breaker is described which includes an electric motor, a crank and piston driven by the motor and a ram which delivers energy to a bit to produce a hammering output. A pair of handles are mounted on an axis perpendicular to the axial direction of the hammering force. A shock-absorbing mounting for the handles is described.

3,824,418

WALL PLUG-IN TIME SWITCH

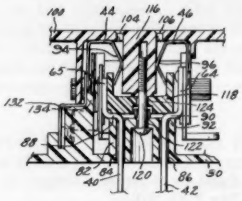
Charles A. Balchunas, Hopkinton, Mass., assignor to General Electric Company, Bridgeport, Conn.

Division of Ser. No. 260,759, June 8, 1972, Pat. No. 3,754,107.

This application Feb. 13, 1973, Ser. No. 331,763

Int. Cl. H02k *11/00*

U.S. Cl. 310—71 **1 Claim**



A wall plug-in time switch wherein a pair of shouldered wall prongs are uniquely mounted in a housing of the time switch for connecting the time switch to a conventional wall mounted outlet box. The construction includes shoulders on the wall prongs which are sandwiched between bosses which are formed on a rear casing and a front cover of the time switch housing. Terminals for an electrical motor are also located in the vicinity of the wall prongs so that the wall prongs, and electric motor are reliably connected to each other and positioned within the housing with the use of relatively few parts.

3,824,419

TRACTION MOTOR INSPECTION COVER

William G. Skrzypczyk, Erie, Pa., assignor to General Electric Company, Erie, Pa.

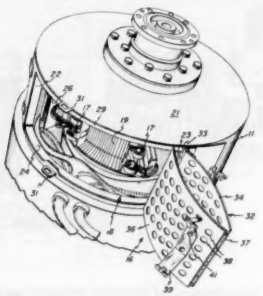
Filed Apr. 4, 1973, Ser. No. 347,857

Int. Cl. H02k *5/10*

U.S. Cl. 310—89 **11 Claims**

An arcuate cover for a motor housing opening wherein an adaptor plate is attached to the housing and an articulated

cover is hingedly secured thereto to open downwardly and close upwardly with provision for securing the cover in a closed position. The cover is articulated proximate its midpoint and a torsion spring is provided to bias the two concave



portions together when in the open position so as to limit its depending length. A second oppositely disposed articulated section may be provided which opens upwardly and is securable to the lower section when in the closed position.

3,824,420

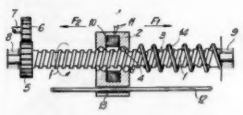
DEVICE FOR TRANSFORMING A ROTATIONAL MOTION INTO A TRANSLATIONAL MOTION

Bernardus Hendrikus Marinus Johannes Stegeman, Amsterdam, and Hilrich Jan Matthijs Venker, Heemstede, both of Netherlands, assignors to Honeywell Bull (Nederland) N.V. (Societe anonyme), Amsterdam, Netherlands

Continuation of Ser. No. 119,976, March 1, 1971, abandoned. This application Apr. 6, 1973, Ser. No. 348,600

Int. Cl. H02k *7/06*

U.S. Cl. 310—89 **27 Claims**



A motion transforming device wherein selectively energizable magnetic coupling is provided between the threads of a screw and a nut engaged therewith.

3,824,421

ELECTRIC FILAMENT LAMP

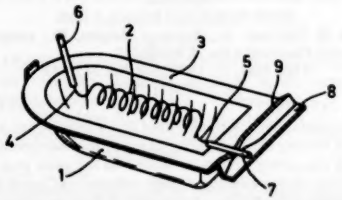
Leffert Schuringa, and Herman Albert Joannes Roefs, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 7, 1972, Ser. No. 286,933

Claims priority, application Germany, Sept. 9, 1971, 12394

Int. Cl. H01j *1/88*

U.S. Cl. 313—110 **3 Claims**



The invention relates to an electric filament lamp, in particular a halogen twin lamp for motor-cars, in which an anti-dazzle cap is incorporated which partly screens one of the filaments and to which one or more current conductors are spot-welded. In the welding place, the screening cap comprises one or several ridges which are at least partly squeezed by the spot-welding operation.

3,824,422

SMOKE DETECTORS

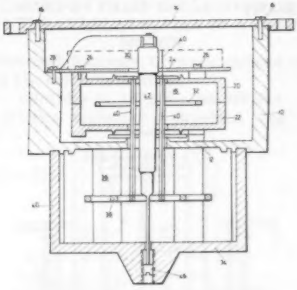
Nicolaas T. Van der Walt; Bernardus J. Bout, and Timothy J. Newington, all of Johannesburg,, South Africa, assignors to Anglo American Corporation of South Africa Limited, Johannesburg, South Africa

Filed June 25, 1973, Ser. No. 373,317

Claims priority, application South Africa, June 27, 1972, 72/4440; Nov. 15, 1972, 72/8084

Int. Cl. H01j *7/40*

U.S. Cl. 313—218 **4 Claims**



A smoke detector for use in detecting the early outbreak of a fire and including a housing defining a smoke chamber, a housing defining a reference chamber, a grid in each of the chambers and an electrostatic shield surrounding each of the grids. The shields are made of an electrically-conductive plastic material thereby eliminating the possibility of corrosion.

3,824,423

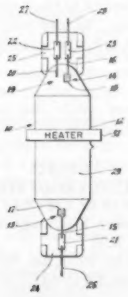
ELECTRIC DISCHARGE LAMP

Romano G. Pappalardo, Sudbury, Mass., and Samir A. Ahmed, Manhattan, N.Y., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 2, 1973, Ser. No. 356,521

Int. Cl. H01j *61/12*

U.S. Cl. 313—225 **17 Claims**



A low pressure electric discharge lamp comprising a sealed light-transmissive envelope and a fill within the envelope; the

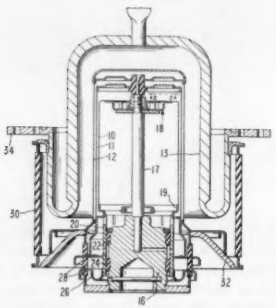
fill including, as the primary light-emitting material, a highly fluorescent aromatic organic compound, such as perylene, coronene, p-terphenyl, 1,6-diphenyl-hexa-1,3,5-triene, 9,10-diphenylanthracene, and 1,4-bis-2-(4-methyl-5-phenyloxazolyl) benzene. At operating temperatures, the pressure or partial pressure of the vaporized organic compound is less than 1 torr.

3,824,424

MESH TYPE FILAMENTARY THERMIONIC CATHODE EMITTER AND TUBE USING SAME

Sterling G. McNees, Los Altos Hills, and James P. Polese, Menlo Park, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Mar. 26, 1973, Ser. No. 345,052
Int. Cl. H01j *1/15, 19/08;* **H01k** *1/02*
U.S. Cl. 313—341 **6 Claims**



First and second sets of thermionic cathode emitter filaments are wound into a composite cross-wound helical cathode emitter structure. The helical cathode emitting structure is supported at opposite ends by means of electrical terminals for passing electrical current through the cross-wound filaments. At one end of the composite mesh, the filaments have inwardly directed terminal portions terminating on the terminal support structure, whereby the inwardly directed terminal portions of the filaments permit a certain degree of flexibility to accommodate unequal thermal expansion of the support and mesh and whereby the cooling effect of the terminal structure is generally limited to the inwardly directed terminal portions of the filaments. The terminal structure also includes flexible support fingers to further accommodate unequal thermal expansion.

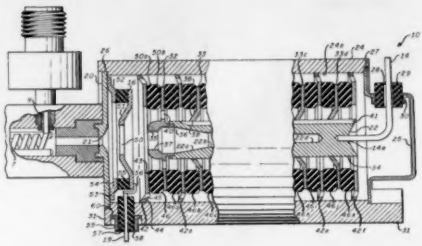
3,824,425

SUPPRESSOR ELECTRODE FOR DEPRESSED ELECTRON BEAM COLLECTOR

John L. Rawls, Jr., Archer, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

Filed May 21, 1973, Ser. No. 362,135
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.5 **5 Claims**

A rugged unitary electron beam collector structure for a velocity modulation or other high power electron beam vacuum tube is characterized by the use of a ruggedly mounted suppressor electrode at the entry of the collector permitting reliable, high efficiency operation. The improved



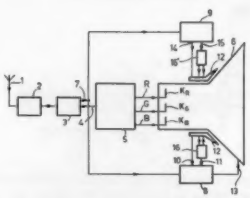
structure is constructed of stacked ceramic and metallic elements bonded together in a configuration also providing improved tolerance to thermal and mechanical shock.

3,824,426

COLOUR TELEVISION DISPLAY APPARATUS PROVIDED WITH A CATHODE-RAY TUBE

Edgard Emile Charles Rossaert, Brussels, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 11, 1972, Ser. No. 296,657
Claims priority, application Netherlands, Oct. 23, 1971, 7114607
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 GD **10 Claims**



Colour television display apparatus in which for correction of isotropic astigmatism a correction current flows through the coil halves of at least one deflection coil unit, which current is substantially a square function of at least one deflection current. As a result a correction quadripolar field is produced. The correction current generator includes passive elements, namely impedances, diodes and transistors operating as switches. The deflection coil halves are toroidally wound on the core.

3,824,427

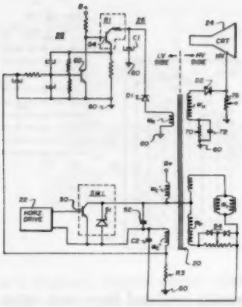
HIGH VOLTAGE REGULATOR

Fenwick R. McLeod, Jr., Prospect Heights, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Mar. 16, 1973, Ser. No. 342,313
Int. Cl. H01j *29/70*
U.S. Cl. 315—29 **21 Claims**

A horizontal flyback transformer in a television receiver includes a driving choke winding coupled to a horizontal drive stage. A regulating winding is wound on the same core leg as the driving choke winding. A high voltage winding and a primary winding for driving a horizontal deflection yoke coil are wound on an opposite core leg. To regulate the high voltage developed by the high voltage winding, the regulating winding is coupled to a variable loading circuit controlled by current

through a resistor in series with the driving choke winding. Each core leg includes an air gap selected to cause the leakage



inductance between the primary winding and the driving choke winding to be equal to the inductance of the primary winding.

3,824,428

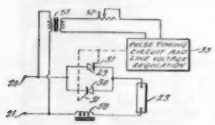
HIGH FREQUENCY FLUORESCENT TUBE LIGHTING CIRCUIT AND A-C DRIVING CIRCUIT THEREFOR

Joel S. Spira, Allentown, and Joseph Licata, Schnecksville, both of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Division of Ser. No. 843,927, July 23, 1969, Pat. No. 3,619,716. This application Sept. 7, 1971, Ser. No. 178,056

Int. Cl. H05b *39/00*

U.S. Cl. 315—105 **10 Claims**



A sinusoidal voltage source in series with a fluorescent, mercury vapor, sodium vapor device, etc. is pulsed at a given pulse repetition rate with the pulse having a given conduction time. Two or more tubes can sequentially conduct pulses with the current input being a continuous sinusoid. A particular pulsing circuit contains a modified pulse-forming network consisting of one or more stages of a closed series connection of a choke and two capacitors. The chokes of each stage are connected in series. The modified pulse-forming network is used as a frequency converter per se, as a d-c to a-c converter, or specifically is in parallel with a fluorescent tube load.

3,824,429

CAPACITIVE DISCHARGE IGNITION SYSTEM

Jose Luis Almendro Davalillo, Madrid, Spain, assignor to Fabrica Espanola Magnetos, S. A., Madrid, Spain

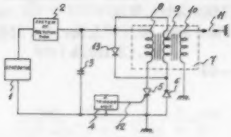
Filed June 20, 1972, Ser. No. 264,458

Claims priority, application Spain, July 9, 1971, 393129

Int. Cl. H05b *37/02*

U.S. Cl. 315—209 R **1 Claim**

A capacitive discharge ignition system in which a source of D.C. power charges a capacitor which is in series with the primary winding of a coil (the secondary winding being connected in series with a sparking device). The coil also includes an auxiliary primary winding magnetically connected to the secondary winding and connected in series with a diode in opposition to said primary winding and in parallel to said primary



winding and said triggering device. In one embodiment another diode is also connected in parallel to said auxiliary winding to dampen current delivered thereto.

3,824,430

CIRCUIT ARRANGEMENT FOR RECOGNITION OF A DEFECT CAUSED BY PHASE BREAKDOWN OR GROUND SHORT IN THE CURRENT SUPPLY OF A THREE-PHASE MOTOR

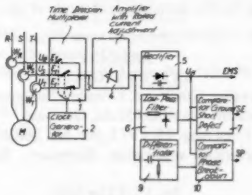
Michael Hentschel, Hannover, Germany, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed May 16, 1973, Ser. No. 360,946

Claims priority, application Switzerland, Aug. 23, 1972, 12483/72

Int. Cl. H02h *7/09*

U.S. Cl. 317—13 R **9 Claims**

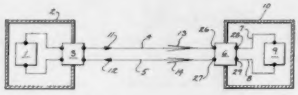


A circuit arrangement for recognition of a defect from detection alternating voltages proportional to current values at the outer conductors of a three-phase motor and which defects are brought about by phase breakout or ground short in the current supply of the three-phase motor, wherein there are provided a time divison-multiplex device and thereafter a rectifier circuit arrangement for generating a time division-multiplex signal from the detection alternating voltages by means of cyclically successive samples of uniform duration and forming from the positive or negative parts of the time division-multiplex signal through smoothing a measurement voltage, the amplitude of which is approximately equal to the arithmetic mean value of the rectified multiplex signal. There is further provided a differentiator for differentiating the time division-multiplex signal for the recognition of a phase breakdown, a first comparator for comparing the voltage pulse of the differentiator possessing the maximum amplitude value with a percentual part of the measurement voltage, and wherein the percentual part of the measurement voltage is selected such that the phase breakdown comparator with undisturbed current supply of the motor does not respond and upon the occurrence of a phase breakdown delivers a phase breakdown-indicating signal. For the recognition of a ground short from the time division-multiplex signal there is provided a low pass filter arrangement for deriving peak values of signal components occurring with the frequency of the detection alternating voltages, and a second comparator for comparing the peak values with another percentual part of the measurement voltage, wherein this another percentual part is chosen such that the ground short-comparator during undisturbed current supply of the motor does not respond and upon occurrence of a ground short delivers a ground short-indicating signal.

3,824,431
HIGH VOLTAGE SUPPRESSOR FOR TRANSMISSION LINES

Heinz M. Schlicke, Fox Point, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed May 10, 1973, Ser. No. 358,885
Int. Cl. H02h *1/04*
U.S. Cl. 317—61 **13 Claims**

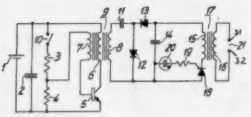


A compensated high voltage suppressor for insertion in a transmission line is shown for shunting large interference voltages from the line to ground. The suppressor has a varistor material through which the large interference voltages are shunted, and this material also functions as a capacitor dielectric. Additional circuit components are connected with this capacitance to form a low pass filter in the transmission line which has a characteristic impedance substantially matching the line characteristic impedance. This impedance matching maintains effective transmission for power, or signals conducted along the line in the normal mode of operation.

3,824,432
BATTERY IGNITER

Eberhard Gersing, Gottingen, Germany, assignor to Braun Aktiengesellschaft, Frankfurt Main, Germany

Filed Aug. 15, 1973, Ser. No. 388,655
Claims priority, application Germany, Sept. 6, 1973, 2243694
Int. Cl. F23q *3/00*
U.S. Cl. 317—79 **9 Claims**



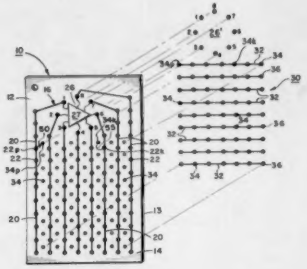
A battery igniter particularly suitable for lighters. The igniter uses a battery as the energy source which in turn feeds a voltage converter including an oscillating transformer with a feedback branch. A rectifier follows the voltage converter to which is connected a storage capacitor. The storage capacitor in turn is connected by means of a high voltage switch to a high voltage igniter transformer. The secondary winding of the high voltage transformer is connected to a spark gap which performs the ignition.

3,824,433
UNIVERSAL CIRCUIT BOARD

William H. Newton, Jr., Houston, Tex., assignor to Thunderco, Inc., Houston, Tex.

Filed Mar. 5, 1973, Ser. No. 338,134
Int. Cl. H05k *1/14, 1/18*
U.S. Cl. 317—101 CE **7 Claims**

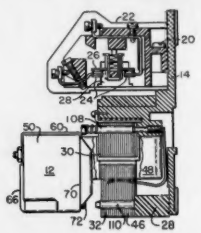
The invention generally concerns two and three-dimensional matrixes programmable for any desired electric network, and the method for making the same. Each matrix includes groups of parallel-spaced, mutually-perpendicular conductors electrically insulated from each other by a dielectric member which is imperforate at the crossover points of the conductors.



3,824,434
RELAY WITH TIME DELAY COIL

Robert D. Boley, Lexington, Ky., and William E. Grass, Whitefish Bay, Wis., assignors to Square D Company, Park Ridge, Ill.

Filed Dec. 26, 1972, Ser. No. 318,053
Int. Cl. H01h *47/18*
U.S. Cl. 317—141 S **10 Claims**



An electromagnetically operated A.C. relay which is actuated an adjustable timed interval after the relay is energized. The relay incorporates the timing accuracy provided by a solid state timing circuit and the power switching advantages provided by mechanically operated switching contacts. The relay includes a unitary coil and timing unit which may be substituted for a coil in an instantaneous operated relay to convert the instantaneous operated relay to a relay which is actuated a predetermined time interval after the relay is energized.

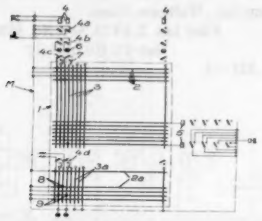
3,824,435
MODULE FOR USE WITH SYSTEMS HANDLING MULTIPLE AUTOMATIC FUNCTIONS

Christian A. Sebille; Saint Jean De Folleville, and Claude J. P. Prugnaud, all of Maisons-Laffitte, France, assignors to S. A. dite Ethylene Plastique, Courbevoie, Hauts de Seine and S. A. dite Comsip Automation, Rueil Malmaison, Hauts de Seine, both of, France

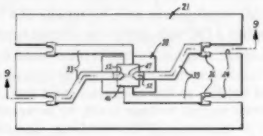
Filed Jan. 24, 1973, Ser. No. 326,250
Int. Cl. H01h *47/22*
U.S. Cl. 317—157 **7 Claims**

A module for use with systems handling multiple automatic functions incorporates a matrix of rows and columns of signal

lines which can be interconnected by means of short circuit tags and by the operation of relays responsive to input instructions to produce a required overall circuit configuration for processing the input instructions into appropriate outputs.



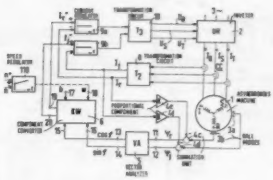
3,824,436
ACTIVE THIN FILM DEVICE BASED ON CROSSED DISCONTINUOUS THIN FILMS AND METHOD
Francis P. Fehlner, 83 E. 4th St., Corning, N.Y. 14830
Continuation-in-part of Ser. No. 163,887, July 19, 1971, abandoned. This application Mar. 9, 1973, Ser. No. 339,931
Int. Cl. H01l 3/00
U.S. Cl. 317—234 R **22 Claims**



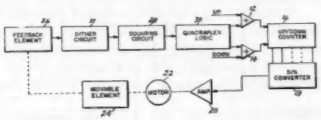
An active thin film device of solid state electron structure having a relatively thin layer of electronically pervious insulating material with at least one discrete portion of electronically pervious conductive material disposed on the insulating material, with at least one additional portion of electronically pervious conductive material disposed on the insulating material, the first named and additional portions in combination with the layer of insulating material forming first and second conductive regions, the first and second conductive regions being substantially free of normal electric fields. Means is used for applying a voltage to one of said conductive regions to cause electron injection therefrom into the insulating layer to thereby affect the conductivity of the other conductive region.

3,824,437
METHOD FOR CONTROLLING ASYNCHRONOUS MACHINES
Felix Blaschke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Continuation of Ser. No. 63,073, Aug. 12, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,572
Claims priority, application Germany, Aug. 14, 1969, 1941312; Apr. 22, 1970, 2019263
Int. Cl. H02p 5/40
U.S. Cl. 318—227 **25 Claims**

A component converter has two adding amplifiers each having two inputs and four multipliers each having two inputs and an output. Each output of the multipliers is connected to a corresponding input of the amplifiers. A first input terminal is connected to an input of each of two of the multipliers and applies a stator related field component voltage cos ϕ thereto. A second input terminal is connected to an input of each of the other two of the multipliers and applies a stator related field component voltage sin ϕ thereto. A third input terminal is connected to the other input of each of two of the multipliers and applies a field axis related voltage b or a stator related component voltage I_r thereto. A fourth input terminal is connected to the other input of each of the other two of the multipliers and applies a field axis related voltage w or a stator related component voltage I_j thereto.



3,824,438
DITHER CIRCUIT
Harold Dean Wiebe, Sharonville, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed June 13, 1973, Ser. No. 369,486
Int. Cl. G05b 23/02
U.S. Cl. 318—631 **4 Claims**

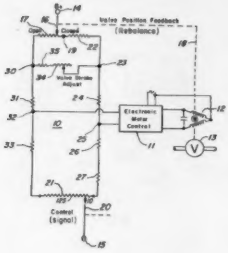


An apparatus for use with a servomechanism having a transducer coupled to a movable element and producing a quantized feedback signal. The apparatus provides a dither signal on an output of the feedback element at a frequency which keeps the servomechanism from changing the position of the element from a desired position.

3,824,439
ELECTRONIC STROKE ADJUST FOR MOTOR CONTROL
B. Hubert Pinckaers, Edina, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 14, 1973, Ser. No. 332,463
Int. Cl. G05b 1/06
U.S. Cl. 318—667 **3 Claims**

An improved condition control system including an electrical bridge circuit for controlling a motor which in turn positions a valve or damper. The motor also drives a wiper on a valve position feedback potentiometer. The valve feedback potentiometer is specifically placed in the bridge network in series with a further resistor so that an electrical voltage center occurs in the bridge at one end of the potentiometer. A stroke adjust variable resistance is connected in parallel with

the series connected feedback potentiometer and further resistor to provide an electronic valve stroke length adjust. In



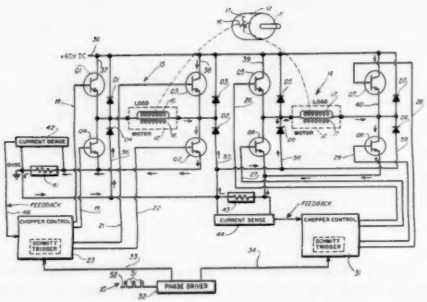
adjusting stroke length only the open position of the valve is controlled while the closed position of the valve, i.e., at the electrical voltage center, is not affected.

3,824,440

STEPPING MOTOR CONTROL SYSTEM

Michael D. McIntosh, Greencastle, Pa., assignor to Landis Tool Company, Waynesboro, Pa.

Filed Aug. 2, 1972, Ser. No. 277,143
Int. Cl. H02k *37/00*
U.S. Cl. 318—696 **4 Claims**



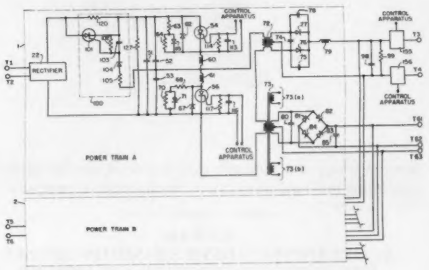
An improved method of driving a stepping motor utilizes a high voltage power supply and a control system which causes high rates of change of motor winding current to obtain high response speed and torque. Feedback is utilized to sense current level and a corrective action is taken when the current being monitored deviates from predetermined maximum or minimum limits. Such limits are necessary to prevent damage to the motor caused by excess current or stalling of the motor caused by too little current. The rate of change of current is a function of circuit parameters, motor parameters, and motor torque. Corrections may occur typically 4,000 times per second. Each of the motor windings is controlled by a bridge-amplifier circuit having two pairs of transistors connected in series with the motor winding coupled between two center points. The line current from each circuit is connected to a single driver to control the rotational speed and direction of the motor shaft.

3,824,441

MULTIVOLTAGE, REGULATED POWER SUPPLY WITH FAULT PROTECTION

Albert M. Heyman, Bedford, and Edward H. Friedman, Needham, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1973, Ser. No. 320,047
Int. Cl. H02m *3/32*
U.S. Cl. 321—2 **12 Claims**



A power supply for providing a plurality of regulated voltage levels while protecting the power supply from damage due to fault conditions. The power supply provides apparatus for rectifying AC input power and, by means of a DC to DC converter, supplies a DC voltages to the output terminals.

A selected DC output voltage is monitored by feedback circuits. The feedback circuits control the operation of switching elements of the DC to DC converter, and therefore determine the monitored output voltage level, by increasing or decreasing the rate of operation of the switching elements.

Various fault conditions, such as over and under-voltage conditions, etc., are monitored by the fault detection apparatus at the selected output voltage terminals. The detection of a fault condition causes the power supply to suspend operation. Operation of over-current condition detection apparatus is continually verified.

The apparatus supplying the selected output voltage terminals simultaneously supplies the terminals providing the remainder of the plurality of output voltages. Because of the coupling of the source apparatus for the output voltage terminals, regulation of one voltage level provides regulation for each voltage level. Similarly, fault conditions at any of the voltage terminals are detected by the fault detection apparatus.

3,824,442

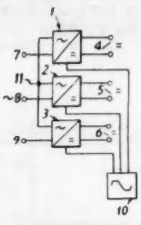
INVERTER CIRCUITS

Kenneth Gordon King, London, England, assignor to Westinghouse Brake and Signal Company Limited, London, England

Continuation of Ser. No. 268,460, July 3, 1972. This application Aug. 23, 1972, Ser. No. 282,938
Claims priority, application Great Britain, July 23, 1971, 34783/71
Int. Cl. H02m *7/00*
U.S. Cl. 321—5 **4 Claims**

A polyphase, floating neutral, inverter in which harmonics of the operating frequency are added to the fundamental to increase the line-to-line output voltage for a given input voltage. In the three-phase three-wire case the Triplen harmonics are

used. The inverter uses single phase amplifiers and a polyphase drive signal generator. One generator is described



in detail. The inverter also includes a rapid acting semiconductor device protection circuit which employs an electrical network analog of the thermal characteristics of the device.

3,824,443

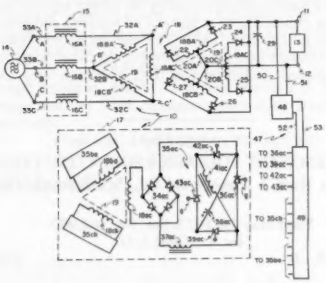
REGULATOR CIRCUIT HAVING A CLAMPED REGULATING WAVE

Harold J. Brown, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Continuation of Ser. No. 257,857, May 30, 1972. This application Jan. 5, 1973, Ser. No. 321,287

Int. Cl. H02m *7/00*

U.S. Cl. 321—5 **11 Claims**



A circuit for providing a regulated a-c or d-c output voltage from an unregulated a-c input voltage. A series regulating network is disposed between the regulator input and the regulator output to support the difference between the unregulated input voltage and the regulated output voltage. A shunt regulating network is connected in shunt with the series regulating network to generate a plurality of regulating waves which, together with the input voltage, control the current through and voltage across the series regulating network. Output voltage sensing circuitry controls the phase angle between the input voltage and the regulating waves, as required, to establish and maintain the regulated output voltage.

3,824,444

CONTROLLED RECTIFIER SYSTEMS AND FLEXIBLE GATE PULSE CONTROL CIRCUITS THEREFOR

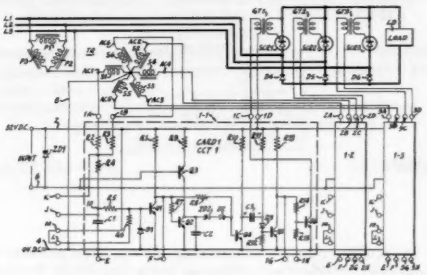
Robert W. Spink, Wauwatosa, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed July 5, 1973, Ser. No. 376,913

Int. Cl. H02m *7/20*

U.S. Cl. 321—5 **11 Claims**

A plurality of different controlled rectifier systems for D.C. motor control using flexible gate control circuits. Three like gate control circuits are adapted to be mounted on each printed circuit card. Each gate control circuit is universal in character and is provided with external terminals whereby it can be connected for different applications such as semi-converter, half-wave reversing, full-wave system, and the like. This gate control circuit includes control signal integration where the control signal shapes the ramp and a pulse is generated after a fixed energy accummulation. This flexible gate control circuit is provided with a novel ramp stretch cir-



cuit that can be rendered effective by jumpering external terminals. Provision is also made for connecting to external terminals an external ramp stretch circuit of a different time constant. The invention affords a single design of gate control circuit adapted for use in a plurality of different silicon controlled rectifier systems so that all are insensitive to line phase rotation.

3,824,445

CHOKE ARRANGEMENT FOR LIMITING SWITCH-IN CURRENT FLOW THROUGH THYRISTOR VALVES OF HIGH-VOLTAGE CONVERTER CIRCUIT

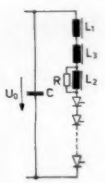
Peter Etter, Baden, Switzerland, and Jurgen Hengsberger, Berlin, Germany, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland and Allgemeine Elektricitacts-Gesellschaft AEG-Telefunken, Berlin and Frankfurt/Main, Germany

Filed Oct. 18, 1972, Ser. No. 299,334

Claims priority, application Switzerland, Oct. 29, 1971, 15791/71

Int. Cl. H02m *1/18*

U.S. Cl. 321—11 **7 Claims**

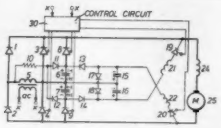


A high-voltage converter system utilizing a string of series-connected thyristor type valves in which capacity created currents flowing through the thyristors during the switch-in phase of their operating cycle are limited by inclusion of an arrangement of sequentially saturatable core type chokes located in the main load current flow path through the thyristors.

3,824,446
CONTROLLED RECTIFIER

Johannes Forster; Karl-Heinz Bezold, and Gerhard Vitt, all of Berlin, Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany

Filed Feb. 22, 1973, Ser. No. 334,756
Claims priority, application Germany, Feb. 22, 1972, 2209293
Int. Cl. H02m 1/18; H02p
U.S. Cl. 321—12 13 Claims

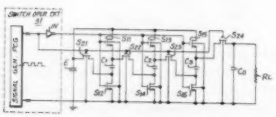


A rectifier circuit, for alternating current, has a plurality of controlled rectifiers and a separate quenching device for each of the controlled rectifiers. Each quenching device is connected in parallel with its associated controlled rectifier and includes a quenching thyristor and a quenching capacitor connected in series. A supplemental capacitor is connected in parallel with each of the quenching capacitors. A coupling diode is in the path connecting the supplemental capacitor with the quenching capacitor. This coupling diode and the supplemental capacitor are arranged so that the supplemental capacitor can only be charged during the period when the polarity of the quenching capacitor is changed, which occurs when the quenching capacitor is being recharged in the reverse direction after quenching of the associated controlled rectifier. The supplemental capacitor is coupled to a load which is attached to the D.C. output terminals of the rectifier. A discharge device enables the supplemental capacitor to be discharged through the load.

3,824,447
BOOSTER CIRCUIT

Tsuneo Kuwabara, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Nov. 30, 1972, Ser. No. 310,911
Claims priority, application Japan, Feb. 24, 1972, 47-19237; Dec. 3, 1971, 46-97235
Int. Cl. H02m 7/00
U.S. Cl. 321—15 2 Claims

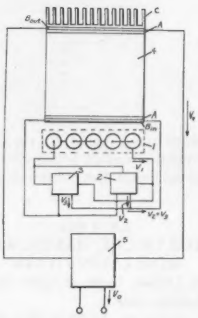


A booster circuit is provided which comprises a booster output capacitor and a plurality of capacitors, which are connected in parallel to a booster power supply for being charged when a voltage of a first level is applied to an input terminal of the booster circuit and, on the other hand, connected in series with each other when a voltage of a second level is applied thereto. The alternate application of the voltages having the first and second levels in repetitive manner allows the generation of a boosted voltage across the booster output capacitor.

3,824,448
CONTACT POTENTIAL GENERATOR SYSTEM

Eduardo Villasenor De Rivas, Los Angeles, Calif., assignor to Rene Villasenor De Rivas, Los Angeles, Calif.

Filed Dec. 21, 1972, Ser. No. 317,275
Int. Cl. H02n
U.S. Cl. 322—2 6 Claims

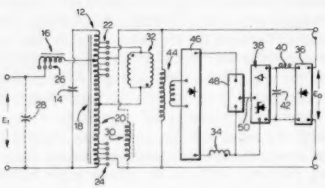


A contact potential generator comprising a ferro-electric generator excited into operation and maintained at that state to produce a useful output signal by the power input of an ignition section consisting of a battery of infrared radiation and beta radiation converter cells. The radiation converter cells utilize the contact potential difference of their electrodes to convert infrared radiation and beta radiation into electric power.

3,824,449
FERRORESONANT VOLTAGE REGULATING CIRCUIT

Alfred Max Hase, 6 Manorwood Rd., Scarborough, Ontario, Canada

Filed May 29, 1973, Ser. No. 364,903
Int. Cl. G05f 1/32
U.S. Cl. 323—6 8 Claims

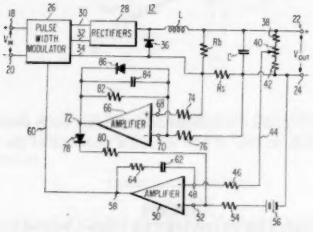


A ferroresonant voltage regulator circuit includes a saturable transformer, an unsaturable transformer in series with the input, and a capacitor across the saturable transformer. Voltage sensing and referencing circuitry is inserted in the output. A synchronous switch having a control wire — usually a saturable reactor, magnetic amplifier or triac — is connected across at least a portion of the saturable transformer, and is controlled by the control coil so that the saturable transformer has a load from the synchronous switch at no-load conditions of the regulator. The amount of loading on the saturable transformer from the synchronous switch varies substantially inversely as the amount of loading because of the regulator load.

3,824,450
POWER SUPPLY KEEP ALIVE SYSTEM

Miles Carrington Johnson, Mount Holly, and Donald Page Clock, Granada Hills, both of Calif., assignors to RCA Corporation, New York, N.Y.

Filed May 14, 1973, Ser. No. 359,902
Int. Cl. G05f *1/46, 1/64;* **H02m** *3/24*
U.S. Cl. 323—23 **9 Claims**

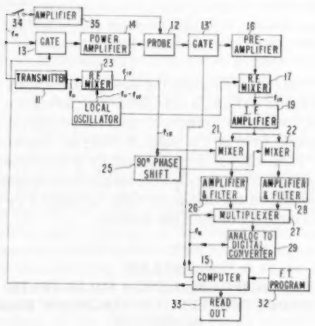


A power supply system comprising a plurality of parallel connected voltage regulators, each regulator having a voltage control loop. Each voltage regulator is provided with a circuit which increases the reference voltage supplied to the voltage control loop so that the control loop of each regulator is prevented from being cut off during standby operation.

3,824,451
PULSE MODULATED FOURIER TRANSFORM MAGNETIC RESONANCE SPECTROMETER UTILIZING QUADRATURE PHASE DETECTION AND HIGH PASS FILTER TO ELIMINATE UNDESIRED STRONG RESONANCE LINES

Raymond Freeman, Menlo Park, and Howard D. W. Hill, Cupertino, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Nov. 15, 1972, Ser. No. 306,947
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **17 Claims**

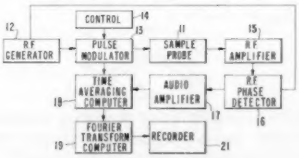


A magnetic resonance spectrometer, for example a pulse modulated Fourier transform spectrometer system, wherein the carrier frequency is positioned on an undesired output resonance line, the receiver circuitry of the system including a quadrature phase detection stage in which the resonance lines falling on the positive and negative frequency side of the zero frequency position in the output spectrum corresponding to the carrier frequency component may be distinguished, the receiver circuitry including a high pass filter positioned between the quadrature phase detector stage and the analog to digital converter for removing all frequency components near the zero component from the signal transmitted to the analog to digital converter, whereby the strong undesired resonance line is eliminated from the output spectrum.

3,824,452
FOURIER TRANSFORM NUCLEAR MAGNETIC RESONANCE SPECTROMETER EMPLOYING MEANS FOR GENERATING RANDOM PULSE INTERVALS TO AVOID ANOMALIES DUE TO NET TRANSVERSE MAGNETIZATION

Raymond Freeman, Menlo Park, and Howard D. W. Hill, Cupertino, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 132,527, April 8, 1971, abandoned.
This application June 6, 1973, Ser. No. 367,598
Int. Cl. G01n *27/00*
U.S. Cl. 324—.5 R **11 Claims**

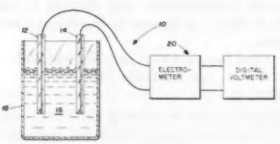


Means for eliminating phase and intensity anomalies in high resolution nuclear magnetic resonance spectra particularly useful in impulse Fourier spectrometers wherein free induction decay signals are obtained from a sample under analysis, the demodulated free precession signals being averaged in a time-averaging computer and then Fourier-transformed and displayed as a resonance frequency spectrum. Phase and intensity anomalies are avoidable by not permitting establishment of a finite net transverse component of magnetization in the steady state regime by introducing a delay into each recycle time. Alternatively, net transverse magnetization may be permitted to occur for a set of pulses but the phase and intensity anomalies may be avoided by changing the pulse rate for each set and by time-averaging the responses of the sets of pulses, each set of pulses being a predetermined number of pulses at a fixed pulse interval for each set, the pulse intervals for each set being different from the pulse interval of said first set by a random period.

3,824,453
METHOD OF DETERMINING CONCENTRATIONS

Charles Taft Baker, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 874,287, Nov. 5, 1969, abandoned.
This application Feb. 4, 1972, Ser. No. 223,523
Int. Cl. G01n *27/42*
U.S. Cl. 324—29 **8 Claims**



A reference electrode and test electrode comprising a body of semi-conductor material having an element incorporated in it are positioned in a solution containing the element and the potential between the electrodes is measured. If the concen-

tration of the element in the solution is known, the potential indicates the concentration of the element in the test electrode. Conversely, if the concentration in the test electrode is known, the potential indicates the concentration in the solution. In the latter case, the test electrode is prepared by plating a compound containing the element onto a body of semi-conductor material and diffusing the element into the body.

3,824,454

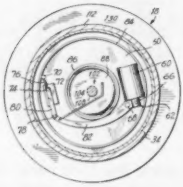
CALIBRATED ELECTROSTATIC CHARGE DETECTOR AND METHOD FOR MEASURING THE STRENGTH OF ELECTROSTATIC FIELDS

Sidney Charles Stern, Framingham; Ralph Gray Eldridge, Lexington; John Clark Johnson, Westboro, and David Karl Beaver, Tewksbury, all of Mass., assignors to Enviro/Tech Sciences, Inc., Newton Upper Falls, Mass.

Filed Oct. 18, 1971, Ser. No. 190,073

Int. Cl. G01r *5/28, 29/11*

U.S. Cl. 324—32 **17 Claims**



Disclosed is an electrometer having a sensing element located within a conductive housing. A shutter encloses the sensing element and its conductive plate within the housing. An iris diaphram is provided to restrict the electric field entering the housing. Upon the periodic closing of the shutter, there is formed a Faraday cage with the sensing element brought into contact with the shutter and housing. The controlling circuitry is separated and shielded from the sensing means.

An inert gas is used to surround the sensing element to substantially prevent fires and explosions when the instrument is used in an explosive atmosphere.

The control circuitry provides for asymmetrical control signals such that the shutter has a shorter closed cycle as opposed to an open cycle.

A calibration plate is disclosed jointly used in combination with the sensing element to establish predetermined voltage levels in the operational environment in which the instrument is used.

3,824,455

APPARATUS FOR GENERATING MUTUALLY ORTHOGONAL SINUSOIDAL SIGNALS UTILIZING ORTHOGONAL HALL PLATES WHICH ARE RELATIVELY ADJUSTABLE

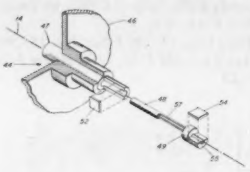
Barry N. Levitt, Framingham, and Francis L. Shorey, Concord, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 6, 1971, Ser. No. 204,842

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 R **1 Claim**

Angular displacement measuring apparatus wherein a pair of Hall effect cells orthogonally disposed and affixed to a stator element are disposed within a magnetic field generated by a pair of permanent magnets affixed to a rotor element is disclosed. In response to a control current passing through such pair of Hall effect cells a Hall effect voltage is generated within each one of such cells, the magnitude of such voltage being related to the sine and cosine of the angular displacement between the rotor element and stator element. The Hall effect cells are orthogonal to within a tolerance of two minutes



of arc. Such tolerance is achieved by affixing each one of the Hall effect cells to one of two separate portions of the stator element.

3,824,456

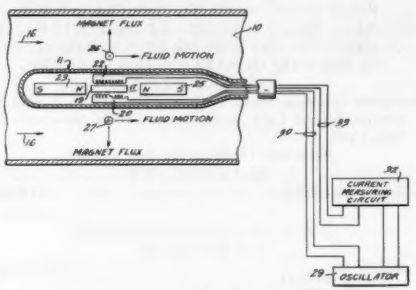
MAGNETOMETER FLOWMETER USING PERMANENT MAGNETS AND MAGNETOMETER ELEMENTS ALIGNED WITH THE FLOW

David E. Wiegand, Idaho Falls, Idaho, assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 23, 1973, Ser. No. 335,280

Int. Cl. G01r *33/12*

U.S. Cl. 324—34 FL **6 Claims**



A flowmeter for measuring the flow of conducting fluids, in particular liquid sodium, is described. The flowmeter includes a permanent magnet or electromagnet for setting up a steady-state magnetic field in the fluid. A fluxgate element is positioned so as to detect the magnetic field developed by the movement of the fluid through the steady-state magnetic field. The magnitude of the magnetic field developed by the fluid motion is a measure of the fluid velocity.

3,824,457

METHOD OF MAKING A SOLID-STATE SUPERCONDUCTING ELECTROMAGNETIC RADIATION DETECTOR

Myron Strongin, Center Moriches; Anand M. Saxena, Upton, and Jack E. Crow, Bellport, all of N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

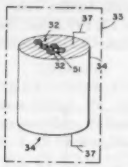
Filed Apr. 4, 1973, Ser. No. 347,756

Int. Cl. G01r *33/02*

U.S. Cl. 324—43 R **8 Claims**

Method for making a solid-state superconducting electromagnetic radiation detector by the steps of dividing aluminum into tangled, irregular, clusters of small randomly arranged oxide coated aluminum particles that are compressed

and shaped into a self-sustaining solid mass. Connecting leads to the mass and cooling the mass to superconducting temperatures provides a transducer-detector that produces an output



voltage in response to electromagnetic radiation that is incident on the surface of the mass over a broad band of frequencies.

3,824,458

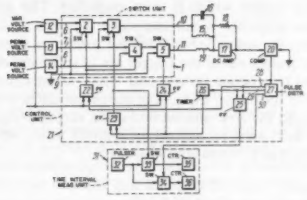
DEVICE FOR MEASURING PARAMETERS OF ELEMENTS OF PARALLEL LC-CIRCUIT

Alexandr Ivanovich Martyashin, ulitsa Kirova, 69, kv. 59; Andrei Elizarovich Morozov, Uritskogo 44/10; Eduard Konstantinovich Shakhov, ulitsa Gladkova, 13, kv. 5, and Viktor Mikhailovich Shlyandin, ulitsa Lermontova, 12, kv. 17, all of Penza, U.S.S.R.

Filed Jan. 22, 1973, Ser. No. 325,927

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 P **1 Claim**



For measuring the parameters of the elements of a parallel LC-circuit, an apparatus which comprises a switching unit the first input whereof is connected to a source of linearly varying voltage, started by an external signal. A second input of the switching unit is connected to a source of permanent voltage. A third input is connected to a source of permanent voltage of the opposite polarity, and the fourth input is grounded. A DC amplifier with a parallel resistive negative feedback has an input is connected through the parallel LC-circuit to the first input of the switching unit and is also connected through a reference inductance coil to the second input of the switching unit. The device further comprises a comparison unit connected to the output of the DC amplifier, a control unit connected to the output of the comparison unit and a time interval measuring unit connected to the output of the control unit. At the moment of the arrival of an external signal, the first output of the switching unit is connected to the first input thereof, and the second output of the switching unit is connected to the second input thereof. At the moment when the output voltage of the DC amplifier equals zero for the first time, the first output of the switching unit is connected to the fourth input thereof, and the second output of the switching unit is connected to the third input thereof. Following a metered time interval after the moment when the output voltage of the DC amplifier equals zero for the second time, the first output of the switching unit is connected to the second input thereof, and the second output of the switching unit is connected to the fourth input thereof. At the moment when the output voltage of the DC amplifier equals zero for the third time, the first output of the switching unit is connected to the fourth input thereof.

3,824,459

METHOD OF MEASURING THE ELECTROSTATIC CAPACITY OF A CAPACITOR

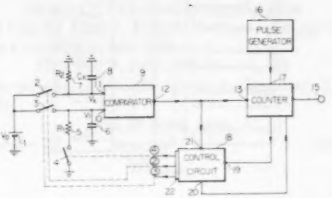
Kozo Uchida, Tokyo, Japan, assignor to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Sept. 17, 1973, Ser. No. 397,745

Claims priority, application Japan, Sept. 21, 1972, 47-94926

Int. Cl. G01r *11/52, 27/26*

U.S. Cl. 324—60 CD **5 Claims**



This invention pertains to an invention for measuring the electrostatic capacity of a capacitor and comprises three processes. The first process is the application of a fixed voltage to both a capacitor to be measured and a standard capacitor; the second process is the discharging of the electric charges of the standard capacitor during the time a counter counts from O to n and then obtaining the terminal voltage V_x of the standard capacitor; the third process is the discharging of the electric charges of the capacitor to be measured during the time a terminal voltage of the capacitor to be measured changes from said fixed voltage to the voltage V_x and then obtaining a count m counted during this time. At the conclusion of the third process the electrostatic capacity of the capacitor to be measured is obtained according to a ratio between said counts m and n and an electrostatic capacity of said standard capacitor.

3,824,460

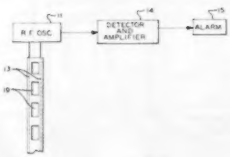
LEAKAGE SENSOR

Reuben V. Gustafson, 228 W. 17th St., New York, N.Y. 10011

Filed Apr. 2, 1973, Ser. No. 346,977

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **12 Claims**



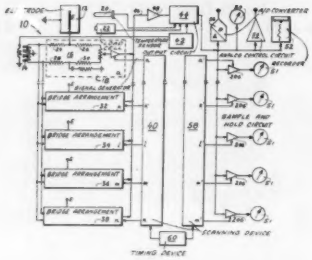
An improved capacitive sensing system adapted for use in detecting the presence of a liquid on a floor or the like in which the sensing probe comprises a pair of encased wires held essentially parallel to each other by a plurality of spaced webs which are an extension of casing of the wires, the probe being held flat on the floor over a considerable length so that leakage anywhere along the probe will result in a capacitance change which may be sensed and an appropriate alarm activated in response thereto.

3,824,461

ELECTRICAL IMPEDANCE MEASURING APPARATUS

Fritz K. Preikschat, 16020 Lake Hills Blvd., Bellevue, Wash. 98008

Filed Sept. 10, 1973, Ser. No. 395,736
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 16 Claims



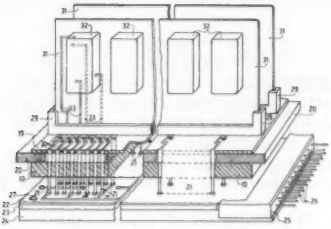
Apparatus for measuring the electrical impedance of a variety of materials including an electrode arrangement providing sample data to an impedance bridge, a frequency generator providing a test signal to the impedance bridge, the impedance bridge including a transformer having three separate windings, two of which are highly symmetrical to each other and all three of which have an impedance below 10,000 ohms, and four resistors having resistance values differing from the impedance of the transformer windings but comparable to the unknown impedance, two of the four resistors connected to each of the two symmetrical windings of the transformer. Output devices for displaying the electrical impedance are also disclosed. In one embodiment, a sample box useful in the measurement of the electrical impedance of bulk materials including novel means for mounting an electrode therein is disclosed. Also disclosed in another embodiment is apparatus useful for measuring the electrical impedance of thin sheet material including novel mechanical thermal compensation means.

3,824,462

DEVICE FOR TESTING PRINTED CIRCUIT BOARDS

Mario Vinsani, Milano, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed Feb. 23, 1973, Ser. No. 335,276
Claims priority, application Italy, Mar. 3, 1973, 21344/72
Int. Cl. G01r 31/02
U.S. Cl. 324—73 PC 7 Claims



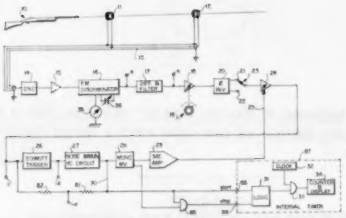
A device is provided for testing printed circuit boards on which electronic components such as integrated circuit units are to be mounted. While in the device, the board is submitted to a test program suitable for testing the bonds with the electronic components mounted thereon, however, if a failure is detected, it is known to reside in the printed circuit of the board, rather than the components, and the test results aid in locating it.

3,824,463

INDUCTANCE TYPE VELOCITY MEASURING APPARATUS

Kenneth L. Oehler, Pflugerville, Tex., assignor to Oehler Research Incorporated, Austin, Tex.

Filed June 23, 1972, Ser. No. 265,530
Int. Cl. G01p 3/66
U.S. Cl. 324—179 2 Claims



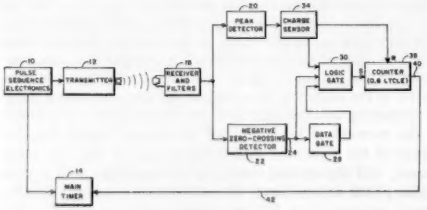
A shot cluster velocity measuring apparatus in which the coils through which the shot is to sequentially pass are mounted in axially spaced relation and are electrically connected as frequency determining elements in a high frequency oscillator, the output of which is frequency modulated as the shot cluster passes the coils. An FM discriminator generates an amplitude varying signal representative of the frequency modulation. A differentiating and filtering circuit shapes the discriminator output which is then amplified. The gain of a variable gain amplifier is automatically adjusted to equalize signal amplitude, and a Schmitt trigger produces rectangular pulses. If the pulses out of the trigger are of sufficient duration they are used to produce "start" and "stop" signals, indicating the passage of the center of mass of the projectile or projectile cluster through the first and second coils, respectively. These signals are then used to control an interval timer which displays the count as a measure of velocity.

3,824,464

PULSE DETECTION SYSTEMS

Donald J. Rotier, Saint Paul, and Robert T. Sawamura, Minneapolis, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 16, 1973, Ser. No. 379,378
Int. Cl. G04f 11/06; H03k 5/20; G01s 9/06
U.S. Cl. 324—186 9 Claims



Pulse detection circuitry for accurately measuring the time for transmission of a train of acoustical energy pulses between a transmitter and receiver. One of the pulses has significantly greater amplitude than the other pulses in the train and has a negative-going zero crossing which occurs at a predetermined time in the pulse train. A peak detector and charge sensor is connected to the receiver. The signal from the receiver is also provided to a negative zero crossing detector which generates pulses to start a timer in response to each negative-going zero

crossing. A peak detector and charge sensor also connected to the receiver detect when the pulse preceding a negative-going zero crossing is greater in amplitude than preceding pulses and reset the counter upon such detection. A data gate which increases system noise rejection is also disclosed.

3,824,465

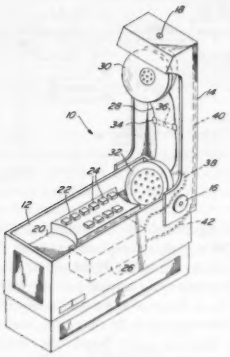
PORTABLE TONE DECODER-ENCODER SYSTEM

Roger D. Blough, Willow Grove, Pa., assignor to International Mobile Machines Corporation, Philadelphia, Pa.

Filed Jan. 4, 1973, Ser. No. 320,892

Int. Cl. H04b *1/38*

U.S. Cl. 325—16 **3 Claims**



A portable tone decoder-encoder receiver and transmitter device wherein a radio network is contained in a housing and is operatively connected to a touch-tone pad also within the housing. A pivoted hollow handle is connected to the housing and this handle contains a releasably positioned transmitter and receiver handset and an antenna, both being operatively connected to the network. The handle may be moved from a carrying position to an operative position, and, when in carrying position is releasably locked to the housing.

3,824,466

SYSTEM FOR THE TRANSMISSION OF DATA SIGNALS BY LINEAR FREQUENCY MODULATION EMPLOYING CIRCUIT IN A RECEIVER TUNED TO A CENTRAL FREQUENCY

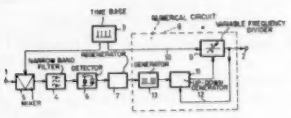
Claude Olier, and Guy Albert Jules David, both of Thiais, France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,543

Claims priority, application France, Jan. 7, 1972, 72.00453

Int. Cl. H04b *1/00*

U.S. Cl. 325—30 **4 Claims**



A system for the transmission of data signals by linear frequency modulation employing a transmitter and a receiver which are synchronized by a circuit present in the receiver which is tuned to a central frequency of the frequency modulated signal applied to a filter the output of which is connected to a detector. Output pulses from the detector, after regeneration in a regenerator, control a digital circuit for controlling the clock phase.

The transmitter includes a voltage controlled oscillator (VCO) in a control loop between the oscillator output and control input of the oscillator for maintaining the central frequency of the oscillator constant.

The transmitter also includes a saw-tooth generator provided with a control loop for maintaining the slope of the saw-tooth voltage constant.

3,824,467

PRIVACY TRANSMISSION SYSTEM

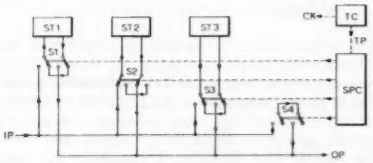
Richard Charles French, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,443

Claims priority, application Great Britain, Dec. 2, 1971, 56081/71

Int. Cl. H04k *1/06*

U.S. Cl. 325—32 **26 Claims**



A selector switching system and a number of memory devices, each capable of storing one time element of a voice transmission signal and simultaneously releasing a stored time element, which form an encoder and decoder for a transmission system, where a voice transmission signal is divided into consecutive time elements that are rearranged to form an unintelligible transmitted signal.

3,824,468

SYSTEM FOR TRANSMITTING INFORMATION IN THE PRESCRIBED FREQUENCY-BAND

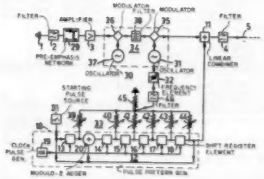
Leo Eduard Zegers, and Wilfred Andre Maria Snijders, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 13, 1967, Ser. No. 667,534

Claims priority, application Netherlands, Sept. 14, 1966, 6612935

Int. Cl. H04k *1/04*

U.S. Cl. 325—32 **8 Claims**

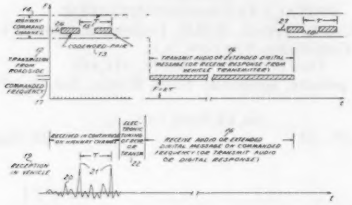


A transmission system in which auxiliary information in the form of a pulse pattern is transmitted with main information without frequency or time separation. Secrecy in the system is increased by also varying the frequency of the main information in accordance with the pulse pattern.

3,824,469
COMPREHENSIVE AUTOMATIC VEHICLE COMMUNICATION, PAGING, AND POSITION LOCATION SYSTEM

Marlin Philip Ristenbatt, 3606 Terhune Rd., Ann Arbor, Mich. 48104

Filed June 16, 1972, Ser. No. 263,704
Int. Cl. H04b *3/60*
U.S. Cl. 325—39 **18 Claims**

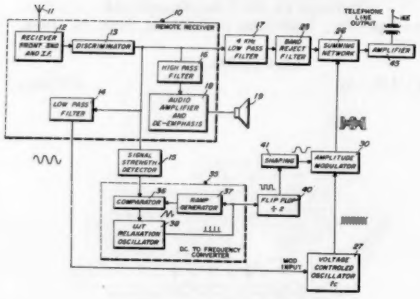


A comprehensive electronic communication system for vehicles to permit transmission and reception of signals with respect to traffic warnings, crash warnings, emergency location signals, assistance signals, danger signals, and traffic advisories and the like, including a transmitter for repetitive transmitting on a single carrier frequency of a digital codeword and a receiver which provides controllable decoding and automatic receiver tuning means for automatically tuning a receiver to a predetermined local channel.

3,824,470
COMMUNICATIONS SYSTEM AND METHOD FOR TRANSMITTING OVER A LIMITED BANDWIDTH TRANSMISSION LINK

Bruce C. Eastmond, Darien, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed Feb. 20, 1973, Ser. No. 333,601
Int. Cl. H04b *3/06*
U.S. Cl. 325—45 **17 Claims**

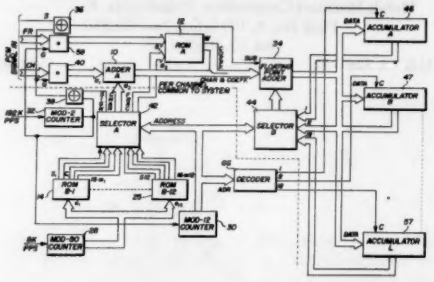


A communications system, including portable transmitters and several remote receivers connected to a base station by means of a limited bandwidth transmission link (such as a telephone line), wherein the receivers include an encoder for transmitting the information over the transmission link and removing a small band of the information and inserting a carrier frequency, amplitude and frequency modulated by the coded squelch signals and the information signal strength signals, and the base station includes a decoder.

3,824,471
PCM TONE RECEIVER USING FLOATING-POINT DIGITAL SPECTRUM ANALYSIS

Jeffrey P. Mills, Forest Park, Ill., assignor to GTE Automatic Laboratories Incorporated, Northlake, Ill.

Filed Dec. 1, 1972, Ser. No. 311,064
Int. Cl. H04b *1/16*
U.S. Cl. 325—321 **14 Claims**

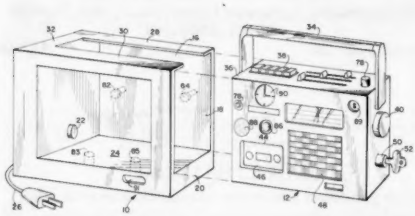


Method and apparatus for detecting one or more tone signals in a PCM signal corresponding to an original analog voltage, without converting the PCM signal to analog, including sequentially monitoring samples of the PCM signal using an expression, V_f, in Fourier spectrum analysis selectively for the respective tone signals to be detected, and storing and accumulating, in floating-point form, the magnitude of V_f, wherein the determined magnitude of the tone signal in the original analog signal. The accumulated magnitude is compared with another accumulated quantity, V_r, derived from the incoming PCM signal, to determine if the amplitude of the respective tone exceeds a certain percentage of that of the entire signal. This allows the detector to operate correctly under varying levels of the analog signal.

3,824,472
PORTABLE RADIO/TAPE RECORDER CHARGING AND LOCKING SYSTEM

F. William Engel, 1418 Third Ave., San Mateo, Calif. 94402; Robert S. Engel, 2365 N. Edgewood St., Arlington, Va. 22207; Gerald J. Derbes, c/o General Delivery, Kings Hill, Saint Croix, and M. Walter Dusseau, 38 Strand St., Christiansted, Saint Croix, both of V.I. 00820

Filed Jan. 24, 1973, Ser. No. 326,210
Int. Cl. A47b *81/06*
U.S. Cl. 325—355 **3 Claims**



Radio/tape recorders, particularly a charging base and a locking system for locking the portable radio/tape recorder when not in use. The system is particularly adaptable to hotel use, enabling the rental and removal of the radio/tape recorder by the individual guest and use of the unit as a business or recreational aid apart from the hotel room.

3,824,473

TRF RADIO RECEIVER WITH ENHANCED Q AERIAL TUNED CIRCUIT AND FREQUENCY RESPONSE COMPENSATION IN THE LOW FREQUENCY AMPLIFIER

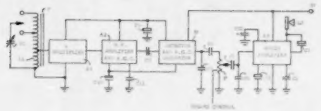
Michael Richard Pye, Carlton, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 16, 1972, Ser. No. 307,303

Claims priority, application Great Britain, Dec. 9, 1971, 57309/71

Int. Cl. H04b *1/16*

U.S. Cl. 325—375 **9 Claims**



This application covers a reciver for amplitude modulated radio signals in which all the active elements are embodied in a single integrated circuit. A single tuned circuit is connected to an RF transistor amplifier and includes postive feedback so as to enhance the magnification factor (Q) of the tuned circuit. A detector is responsive to the signal derived from the tune circuit to produce an audio signal and a low frequency transistor amplifier for amplifying the audio signal. The integrated circuit includes all resistors and transistors of the radio within the integrated circuit.

3,824,474

AUTOMATIC FREQUENCY CONTROL DEVICE

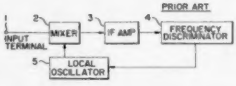
Yoichi Sakamoto, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Sept. 21, 1972, Ser. No. 290,841

Claims priority, application Japan, Sept. 25, 1971, 46-74878; Sept. 25, 1971, 46-74879

Int. Cl. H04b *1/16*

U.S. Cl. 325—420 **5 Claims**



An automatic frequency control device for a television receiver is provided in which a DC tuning voltage superposed upon AFC voltage is applied to one end of a varactor in an UHF tuner whereas said DC tuning voltage is applied to one end of a varactor in a VHF tuner and AFC voltage with a polarity opposite to that of the first mentioned AFC voltage is applied to the other end of the varactor.

3,824,475

SCANNING RADIO RECEIVER

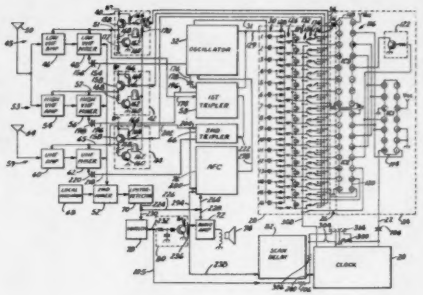
Peter W. Pflasterer, Oak Ridge, Tenn., assignor to Tennelec, Inc., Oak Ridge, Tenn.

Filed Feb. 1, 1973, Ser. No. 328,663

Int. Cl. H04b *1/34*

U.S. Cl. 325—470 **7 Claims**

A signal-seeking receiver automatically scans a plurality of channels of respective predetermined radio frequencies lying in a multiplicity of frequency bands. The channels are tuned in successively by successively coupling respective tuning crystals into the tuning circuit of a signal generator which produces the beating signals for heterodyning. Scanning is stopped upon receiving a signal. For higher bands the frequency of a basic oscillator is multiplied by cascaded frequency-multiplying circuits. Automatic frequency control is provided, for channles in the highest band, with gating means for disabling the frequency control in the absence of a recieved



signal. For bypassing selected channels during scanning, the clock driving the scanner is speeded up when the channels to be bypassed would otherwise be tuned in.

3,824,476

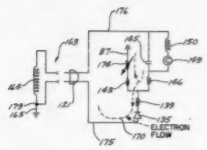
GROUNDED CONTROL CIRCUIT

Curran D. Cotton, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Continuation of Ser. No. 123,046, March 10, 1971, which is a continuation of Ser. No. 803,637, March 3, 1969, abandoned. This application Oct. 10, 1973, Ser. No. 405,203

Int. Cl. G06n *27/00*

U.S. Cl. 328—4 **18 Claims**



A material moisture sensing control includes a circuit connectable to a two-wire alternating current supply in either of two polarity postures. The circuit includes an earth grounding of one electrode and is operable for providing the desired consistent sensing and safe operation with either polarity posture while eliminating the need for either an isolation transformer or an auxiliary isolation resistor at the earth ground electrode.

3,824,477

GROUND SENSITIVE CONTROL FOR ELECTRICAL APPARATUS

Curran D. Cotton, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

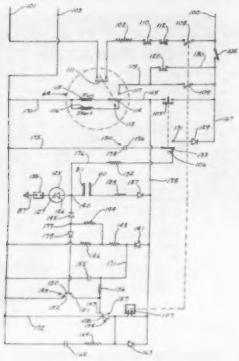
Continuation-in-part of Ser. No. 405,203, Oct. 10, 1973, which is a continuation of Ser. No. 123,046, March 10, 1971, and a continuation of Ser. No. 803,637, March 3, 1969. This application Nov. 2, 1973, Ser. No. 412,456

Int. Cl. G06n *27/00*

U.S. Cl. 328—4 **14 Claims**

In a material moisture sensitive control, and integrating switch, in circuit with a pair of moisture sensing electrodes in a fabric drying apparatus, is operable between conductive and nonconductive postures as a function of the dryness condition of the fabrics being dried. A transistor is operable for initiating

termination of operation of the apparatus responsive to a high voltage developed across the integrating switch in the nonconductive condition. In a preferred embodiment, the integrating



switch is in the form of an electrolytic cell in a series circuit and connected at one terminal to earth ground through which a circuit must be completed for operability of the apparatus.

3,824,478

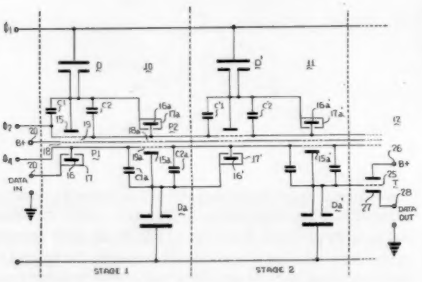
SHIFT REGISTER

Robert A. Mueller, Tucson, Ariz., assignor to Electron Emission Systems, Inc., Chicago, Ill.

Filed Aug. 7, 1972, Ser. No. 278,366

Int. Cl. G11r *19/00*

U.S. Cl. 328—37 **21 Claims**



Integrated circuitry configuration employing coplanar integrated circuit vacuum devices which are fabricated by photo-etching techniques in terms of lines on a flat substrate to form a shift register in which only active thermionic diodes, pentodes and capacitors are employed, and in which crossovers of leads of the integrated circuitry are totally avoided.

3,824,479

CONTROLLER WITH DIGITAL INTEGRATION

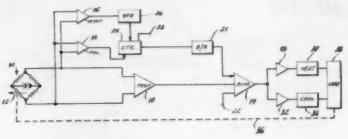
Trygve O. Alger, Norwalk, Conn., assignor to Harrel, Incorporated, East Norwalk, Conn.

Filed Aug. 16, 1972, Ser. No. 280,988

Int. Cl. H03k *17/00*

U.S. Cl. 328—69 **14 Claims**

A controller for use in automatic control applications such as temperature controllers, where a proportional plus automatic reset (integral compensation) or a combination of proportional plus automatic reset and rate (derivative compensation) are applicable. A control characteristic similar to conventional proportional plus automatic reset plus rate control is obtained by use of an up/down digital counter controlled by an oscillator whose frequency is controlled by the error signal. Such a control exhibits the general control characteristics of a proportional plus automatic reset controller in elimination of temperature "droop" but requires little or no adjustment to match the requirements of varying loads. Further elimination



of the need for manual adjustment of rate, reset, and proportional band to match differing loads can be had by shaping the frequency characteristic of the oscillator to a non-linear function of the error signal.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention. In order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

3,824,480

SEQUENTIAL SWITCHING DEVICE

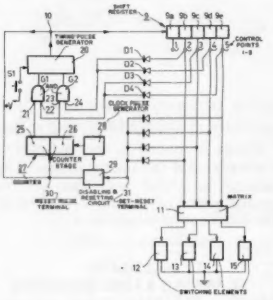
Kamran Eshraghian, Hillcrest, Australia, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,233

Claims priority, application Australia, Nov. 29, 1971, 7204/71

Int. Cl. H03k *17/28*

U.S. Cl. 328—75 **7 Claims**



A switching device is disclosed in which switch control means (a multi-stage shift register) controls the switching of switching elements which, in turn, control a predetermined sequence of operations of a controlled device (for example, a washing machine) in a predetermined sequence of times. Stepping pulse generating means steps the switch control means stage by stage. The timing of the stepping pulses is controlled by a periodic pulse generating means via a gated control means in turn controlled by a counter and the outputs of the switch control means.

3,824,481

CIRCUIT ARRANGEMENT FOR AUTOMATIC ZERO LEVEL COMPENSATION

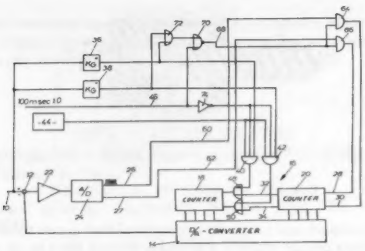
Richard Sponholz, Muhlhofen, and Hans Kiefer, Dubdorf, both of Germany, assignors to Bodenscewerk Perkin-Elmer & Co., GmbH, Uberlingen Bodensee, Germany

Filed Feb. 7, 1973, Ser. No. 330,222

Claims priority, application Germany, Feb. 8, 1972, 2205792

Int. Cl. H04b 1/12

U.S. Cl. 328—162 2 Claims



A known type of circuit for compensating (i.e. balancing or zeroing) an input signal relative to a changing base line includes a voltage-to-frequency converter receiving the input signal being compensated or balanced, a counter receiving the output pulses of this voltage-to-frequency converter, and a digital-to-analog converter controlled by the counter, where the output of the digital-to-analog converter generates a correction signal which can be added algebraically to the input signal for zero level (base line) compensating or balancing. To shorten the time of balancing without causing overshooting, the present circuit causes coarse adjustment by feeding the output of a (relatively high) fixed frequency generator to the more significant counting stages of the counter until an approximation of balance is reached, followed by feeding the output of the conventional voltage-to-frequency converter to the lesser significant stages after this coarse balancing has been completed. The means for changing over from the coarse balancing to the fine adjustment may include a positive and a negative threshold-value switch.

3,824,482

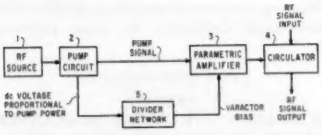
PUMP GENERATED BIAS FOR PARAMETRIC AMPLIFIERS

James J. Whelehan, Jr., Smithtown, N.Y., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed July 30, 1973, Ser. No. 383,573

Int. Cl. H03f 7/00

U.S. Cl. 330—4.9 3 Claims



Parametric amplifier varactor bias, generated by the rectification of pump power, varies with pump power level to prevent detuning of the varactor circuit caused by changes in pump power level.

3,824,483

DIGITAL DEVICE FOR FAST FREQUENCY CONTROL OF A FREQUENCY SYNTHESIZER

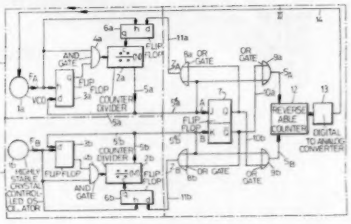
Jean Pierre Margala, and Jean Louis Roger Cassany, both of Paris, France, assignors to International Electric Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,291

Claims priority, application France, July 27, 1972, 72.27049

Int. Cl. H03b 3/04

U.S. Cl. 331—1 A 7 Claims



This relates to a phase locked loop voltage controlled digital synthesizer in which digital pulses produced from a voltage controlled oscillator (VCO) and a first frequency divider and a reference oscillator and a second frequency divider are applied to a comparator which produces an output signal when the compared pulses have repetition frequencies which are not equal. The comparator output signal results in a voltage which is applied to the VCO to change the frequency thereof in steps until repetition frequency equality is achieved. The purpose of the present invention is to shorten the time needed to cause the repetition frequency of the pulses at the output of the first frequency divider to equal the repetition frequency of the pulses at the output of the second frequency divider. This is accomplished by including a reversible counter connected to the comparator output. The output signal of the reversible counter is connected to a digital-to-analog converter to produce the VCO control voltage. In addition, two other control circuits are provided for each of the first frequency divider and the second frequency divider which cooperate with the reversible counter in reducing the time of achieving repetition frequency equality.

3,824,484

TOUCH-TONE SIGNAL GENERATION SYSTEM

Timothy C. Gillette, Cambridge, Mass., assignor to Compound Computing Corporation, Bedford, Wis.

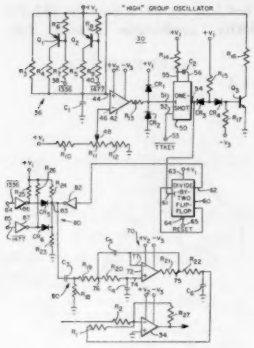
Filed Oct. 12, 1972, Ser. No. 296,791

Int. Cl. H03b 3/02, 3/04, 5/24

U.S. Cl. 331—48 11 Claims

A touch-tone signal generation system includes a pair of oscillators for generating tones substantially the same as those employed in the system of American Telephone & Telegraph Co., under the trademark designation Touch-Tone each of which provides a selected tone pair for use in data communication systems. The oscillators include a capacitor; a charging circuit for the capacitor including a resistive network; and a threshold detector for triggering a one-shot whenever the charge on the capacitor reaches a predetermined threshold level. A resistor may be added in shunt in the resistance network to change the frequency of the oscillator in response to a switching signal. A divide-by-two flip-flop, which is triggered by the one-shot, provides a train of pulses which are filtered by a low pass filter to remove third harmonics. An amplitude weighting network compensates for the attenuation of the fun-

damental of the selected tone. Each oscillator includes a high pass network to block direct current components. The tones



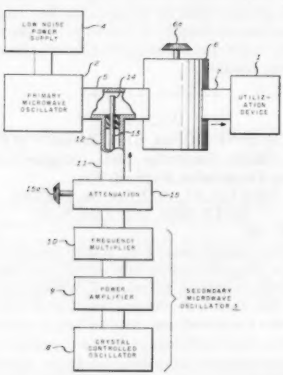
generated by the oscillators are of opposite phase so that the attack transients introduced by the high pass networks will be substantially canceled.

3,824,485

STABILIZED OSCILLATOR WITH OUTPUT HAVING HIGH SPECTRAL PURITY

James R. Ashley, Colorado Spring, Colo., and Frank M. Palka, Gainesville, Fla., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,368
Int. Cl. H03b *3/06*
U.S. Cl. 331—55 **5 Claims**



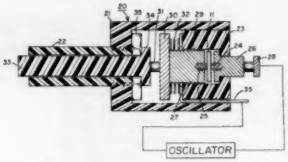
A stable low-noise high frequency signal source comprises a primary high frequency generator stabilized by a high-quality-factor transmission resonator, the primary generator output also being injection phase locked by a stable secondary high frequency quartz crystal controlled generator.

3,824,486

SOLID STATE SWITCHING CIRCUIT EMPLOYING A SELECTIVELY DAMPED PIEZOELECTRIC RESONATOR TO CONTROL A THYRISTOR CIRCUIT

Edmund T. Maciag, Middleburg Heights, Ohio, assignor to Vernitron Corporation, Bedford, Ohio

Filed Oct. 27, 1972, Ser. No. 301,480
Int. Cl. H03b *5/36*
U.S. Cl. 331—65 **5 Claims**



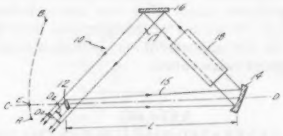
A compact and relatively economical high speed solid state switching circuit wherein a thyristor is controlled by an oscillator employing a selectively damped piezoelectric resonator, the piezoelectric resonator being housed within a mount that yields manual control over its damping.

3,824,487

UNSTABLE RING LASER RESONATORS

Carl J. Buczek, Manchester; Peter P. Chenausky, Farmington, and Robert J. Freiberg, South Windsor, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 8, 1972, Ser. No. 251,040
Int. Cl. H01s *3/08*
U.S. Cl. 331—94.5 C **8 Claims**



Unstable resonator designs having totally reflecting optics which allow isolation of the parameters that control transverse mode discrimination from the parameters that control mode volume and output coupling are disclosed. Various asymmetric ring resonator geometries which include a pair of confocal curved reflecting surfaces and suitable techniques for promoting unidirectional oscillation in these geometries are discussed.

3,824,488

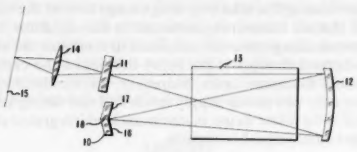
MODE SELECTIVE LASER LINE-SCANNER

Carl C. Aleksoff, Ann Arbor, Mich., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

Filed Apr. 18, 1973, Ser. No. 352,473
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 K **4 Claims**

A crystal of a material having ferroelastic properties and having a face "bent" to a concave rooftop shape by intersec-

tion of a domain wall is provided with a reflecting coating on the "bent" face. The rooftop mirror is employed off-axis in an



optical resonant cavity containing a superradiant medium to form a laser. An image of coherent light can be extracted from the cavity which moves as the domain wall is moved.

3,824,489

MICROWAVE OSCILLATOR

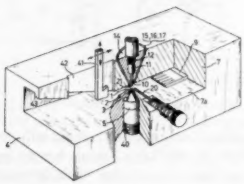
Robert Spitalnik, Cachan, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,660

Claims priority, application France, Apr. 25, 1972, 72.14550

Int. Cl. H03b *7/08*

U.S. Cl. 331—107 R **8 Claims**



A microwave oscillator which is intended for a semiconductor element and which is accommodated in a ridge-type waveguide. The waveguide is formed on the one side by a portion of small height which is closed by a short-circuit element, and on the other side by a portion having a progressively increasing height which is provided with a resonant structure. The resonant structure is formed by a thin vertical pin and by two further pins which are arranged perpendicular to the side walls of the wave guide and which can be axially adjusted. The assembly formed by these three components constitutes a transmission line which enables transmission of a microwave according to the T.E.M.-mode.

3,824,490

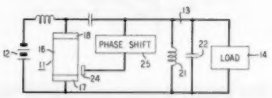
NEGATIVE RESISTANCE DEVICES

Terence James Riley, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 29, 1973, Ser. No. 374,958

Int. Cl. H03b *7/00*

U.S. Cl. 331—107 R **10 Claims**



The efficiency of negative resistance devices of the type now known as BARITT devices is increased by reducing the effect of the positive resistance portion of each current transit cycle. In one embodiment, a control electrode near the injecting contact is connected through a phase delay to the r-f resonator to delay the injection of minority carriers so that a larger portion of carrier transit occurs during the negative resistance cycle portion. In another embodiment, a control electrode near the injecting contact capacitively couples RF energy from the injected carriers to the injecting contact during the positive resistance portion of the cycle.

3,824,491

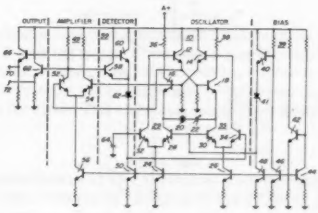
TRANSISTOR CRYSTAL OSCILLATOR WITH AUTOMATIC GAIN CONTROL

Ronald L. Treadway, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 19, 1973, Ser. No. 342,569

Int. Cl. H03b *3/02, 5/36*

U.S. Cl. 331—109 **7 Claims**



A crystal controlled oscillator operable over a wide frequency range includes an emitter coupled oscillator and automatic gain control to maintain the amplitude of the oscillations within a predetermined range to limit crystal drive and to provide a substantially sinusoidal output signal without additional tuned circuits.

3,824,492

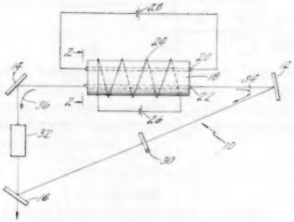
SOLID STATE SINGLE FREQUENCY LASER

Michael J. Brienza, Manchester, and Arnold R. Clobes, Vernon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 22, 1972, Ser. No. 265,363

Int. Cl. H01s *3/06, 3/08*

U.S. Cl. 331—94.5 **9 Claims**



Single frequency, stable laser systems in which a ring resonator having a Brewster ended, solid state rod containing the gain medium are discussed. The lasers which are pumped optically can be operated either continuous wave or pulsed and the phenomenon of spatial hole burning is eliminated by providing a differential loss mechanism in the resonator to avoid the presence of standing waves. The differential loss is

disclosed in various specific inventive embodiments wherein the optical rotation and Faraday rotation of a linearly polarized wave of laser energy either cancel or reinforce one another thereby causing the ring resonator to oscillate in only a single preselected direction.

3,824,493

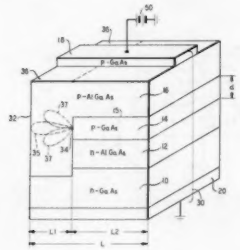
FUNDAMENTAL MODE, HIGH POWER OPERATION IN DOUBLE HETEROSTRUCTURE JUNCTION LASERS UTILIZING A REMOTE MONOLITHIC MIRROR

Basil Wahid Hakki, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 5, 1972, Ser. No. 286,283

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 H **1 Claim**



The waveguide region of a double heterostructure junction laser is terminated at a point distant from a remote monolithic mirror. A passive region, which extends axially between the end of the waveguide region and the remote mirror, comprises a material having low absorption loss and is substantially impedance matched to the waveguide region.

3,824,494

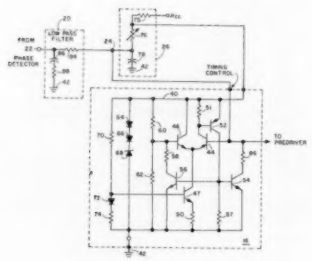
TEMPERATURE STABLE RELAXATION OSCILLATOR HAVING CONTROLLABLE OUTPUT FREQUENCY

Milton E. Wilcox, Tempe, Ariz., assignor to Motorola, Inc., Chicago, Ill.

Filed June 8, 1973, Ser. No. 368,381

Int. Cl. H03b *5/24*

U.S. Cl. 331—111 **16 Claims**



The disclosed oscillator configuration is suitable for being provided in monolithic integrated circuit form and provides a sawtooth output signal having a repetition rate which is controllable and which is substantially independent of temperature variation. The oscillator circuit includes a comparator which senses the voltage across a discrete timing capacitor and switches states to control the charge and discharge of the capacitor. The oscillator configuration insures that no conductive semiconductor devices are connected to the timing capacitor during the relatively long charge time of the capacitor and that all transistors connected to the capacitor during the short discharge time are saturated to minimize the effects of the thermal changes of the active devices on the capacitor charge and discharge times. Moreover, the oscillator circuit requires only two power supply levels and one timing control terminal to facilitate its use in minimum lead integrated circuit packages including other circuits.

3,824,495

CRYSTAL OSCILLATOR, ESPECIALLY FOR CLOCKS AND WATCHES

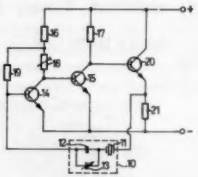
Erich Gerum, Nurnberg, Germany, assignor to Diehl, Nurnberg, Germany

Filed Sept. 13, 1972, Ser. No. 288,680

Claims priority, application Germany, Sept. 17, 1971, 2146490

Int. Cl. H03b *5/36*

U.S. Cl. 331—116 R **14 Claims**



A crystal oscillator arrangement, especially for clocks and watches, in which an oscillator circuit has an input terminal connected to one side of a crystal while between the output side of the oscillator circuit and the other side of the crystal there is connected a decoupling stage that includes a nonlinear resistor. A pulse width varying component is connected in one of the oscillator circuit and decoupling stage. The arrangement provides for a phase shift from the input terminal of the oscillator circuit to the output side of the decoupling stage amounting to 360° or a whole multiple thereof. The arrangement provides for stabilization of the oscillator frequency over a wide range of variation of potential of the supply voltage source, usually, a battery.

3,824,496

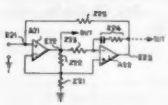
GYRATOR CIRCUITS COMPRISING OPERATIONAL AMPLIFIERS AND OSCILLATING UTILIZING SAME

Norris C. Hekimian, Rockville, Md., assignor to Hekimian Laboratories, Inc., Rockville, Md.

Filed Sept. 28, 1973, Ser. No. 401,591

Int. Cl. H03h *11/00*; **H03b** *7/02*

U.S. Cl. 331—132 **18 Claims**



A Riordan-type gyrator circuit, consisting of two stages of differential operational amplifiers and five inductance-determining impedances, is improved to avoid circuit latch-up at turn-on and to double the operative frequency range. The improvement involves deriving the input signal for the non-inverting input terminal of the second stage from a voltage divider at the output of the first stage rather than from the same

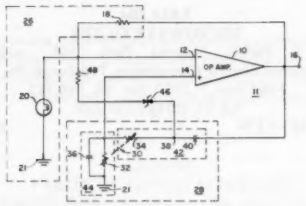
input signal applied to the non-inverting input terminal of the first stage. In addition to its gyrator function, the circuit can be modified to serve as an oscillator by employing positive feedback around the first stage. By rendering the voltage divider adjustable at the output of the first stage, the input conductance of the circuit is rendered variable between positive and negative conductances. The circuit also permits simulation of floating and mutually coupled inductors.

3,824,497

HIGH-PURITY, FREQUENCY-STABLE, ADJUSTABLE, WIEN-BRIDGE, OSCILLATOR

Christopher B. Schwerdt, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 20, 1973, Ser. No. 381,109
Int. Cl. H03b *5/26*
U.S. Cl. 331—141 **13 Claims**



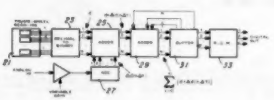
A high-purity, amplitude-stable, adjustable, Wien bridge oscillator utilizing a single amplifier component and a pair of nonlinear devices. A single operational amplifier is utilized in place of two amplifier components. A lamp in the degenerative-feedback path provides amplitude stabilization of the output oscillations. A back-to-back zener diode in series with a resistor is connected between the inverting input of the operational amplifier and a junction between the series resistor-capacitor arm of the bridge circuit thereby extending the linear operating-frequency range of the oscillator, improving amplitude stability of the output oscillations, and preventing output D.C. drift from feeding back to the inverting input of the operational amplifier through the back-to-back zener diode.

3,824,498

DIGITAL PROCESSOR FOR SELECTIVELY SYNTHESIZING SINUSOIDAL WAVEFORMS AND FREQUENCY MODULATIONS

Alan L. McBride, Richardson, Tex., assignor to Dallas Instruments Incorporated, Dallas, Tex.

Filed Dec. 22, 1972, Ser. No. 317,848
Int. Cl. H03k *7/06*
U.S. Cl. 332—9 R **5 Claims**



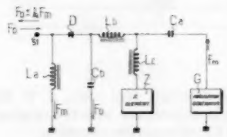
A digital oscillator produces discrete quantized samples of a sinusoidal waveform at a fixed sample time. A predetermined frequency is established. A read only memory has predetermined values of the amplitude of a sinusoidal waveform. A read only memory is addressed with the predetermined frequency number to provide a sample value of said sinusoidal waveform.

3,824,499

DIODE PHASE MODULATOR

Claude Beaugrand, and Roger Ermoglio, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed July 31, 1972, Ser. No. 276,383
Claims priority, application France, Aug. 17, 1971, 71.29963
Int. Cl. H03c *3/22*
U.S. Cl. 332—16 R **8 Claims**



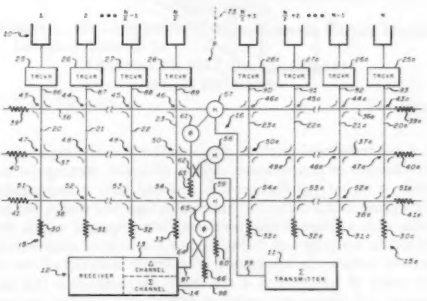
A modulator comprising a diode to which both the modulating signal and the signal to be modulated are applied. The diode circuit comprises an element whose resistance varies inversely in relation to the amplitude of the direct current detected in the diode. This element is preferably a diode.

3,824,500

TRANSMISSION LINE COUPLING AND COMBINING NETWORK FOR HIGH FREQUENCY ANTENNA ARRAY

Carl Rothenberg, North Bellmore, N.Y., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Apr. 19, 1973, Ser. No. 352,790
Int. Cl. G01s *9/02;* **H01p** *5/00*
U.S. Cl. 333—6 **6 Claims**



An improved transmission line network includes signal coupling and combining sub-networks for interchange of high frequency energy between elements of a planar lineal antenna array and a monopulse radar transmitter and receiver having sum and difference channels.

3,824,501

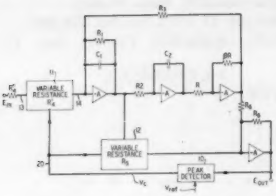
AUTOMATIC CABLE EQUALIZER

Cliff Andrew Harris, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.Y.

Filed July 12, 1973, Ser. No. 378,578
Int. Cl. H04b *3/04*
U.S. Cl. 333—18 **10 Claims**

Disclosed is an active data transmission cable equalizer which minimizes regeneration errors by maximizing the "eye opening" of signals emanating out of digital signal transmission cables. Equalization is achieved by monitoring the equal-

izer's peak output signal, by adjusting the gain k, of the equalizer, to maintain a constant output signal level, and by altering



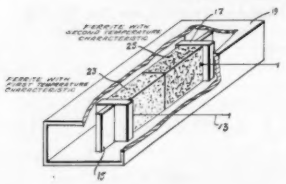
the frequency of a simple real zero, g, in the equalizer's transfer response in accordance with the relation $1/k = K_1 g + K_2$, where K_1 and K_2 are equalizer constants.

3,824,502

TEMPERATURE COMPENSATED LATCHING FERRITE PHASE SHIFTER

Irwin Bardash, Stony Brook, and Christian Schlotterhausen, Commack, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 11, 1973, Ser. No. 350,257
Int. Cl. H01p *1/32*
U.S. Cl. 333—24.1 **4 Claims**



A nonreciprocal latching phase shifter that is compensated for changes in temperature. A pair of ferrite rectangular toroids in series connection are inserted into a rectangular waveguide and a dielectric material is inserted within the toroids with a magnetizing wire centrally disposed within the dielectric material and connected to a source of magnetizing current outside the waveguide. The ferrite material of one of the pairs of toroids has a remanent magnetization that increases with increasing temperature while the other of the pair has a remanent magnetization that decreases with increasing temperature.

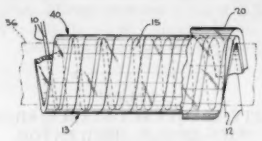
3,824,503

COUPLING DEVICE AND METHOD FOR SIMULTANEOUS IMPEDANCE BALANCING

Robert H. McCracken, Montgomery County, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 4, 1973, Ser. No. 366,894
Int. Cl. H03h *7/42*; **H01p** *5/10*
U.S. Cl. 333—26 **4 Claims**

A wide range coupling device for simultaneously balancing and matching two arbitrary impedances is provided which comprises a tapered line extending over several wavelengths and coiled into a helix of gradually increasing pitch. The tapered line comprises two equal lengths of conductive wire insulated with respect to each other. Taper dimensions are determined by first specifying and interconnecting said impedances and in a single plane adjusting the taper for minimum reflection utilizing time-domain reflectometry. An adhesive material is utilized to fix taper spacing. The tapered line is then rolled into a helix. Time-domain reflectometry is



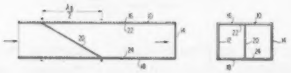
again utilized and helix pitch is adjusted for minimum reflection. The device when interconnecting both said impedances provides balancing and matching thereinbetween.

3,824,504

MICROWAVE FILTER

William J. Parris, Severna Park, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 7, 1973, Ser. No. 395,312
Int. Cl. H01p *1/20, 3/06*
U.S. Cl. 333—73 W **11 Claims**



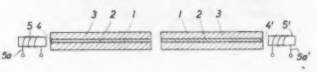
A microwave filter adaptable to suppress the even harmonics of a predetermined fundamental frequency of energy processed in a waveguide. The filter consists of a slanting conductor, for example a wire, connected between the top and bottom walls of a rectangular waveguide such that its ends contact the waveguide at points one half of a guide wavelength apart of the fundamental frequency along the length of the waveguide.

3,824,505

ELECTROMECHANICAL DELAY LINE WHEREIN CORE EXHIBITS HIGHER MEAN REFRACTIVE INDEX THAN ENVELOPE

Manfred Borner, Ulm/Donau, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Apr. 28, 1972, Ser. No. 248,391
Claims priority, application Germany, Apr. 29, 1971, 2121213; Apr. 19, 1971, 7116724
Int. Cl. H03h *9/30*
U.S. Cl. 333—30 R **14 Claims**



A delay line composed of a filamentary core capable of supporting the propagation of mechanical energy and a surrounding envelope. The material of the core and the envelope are such that the core exhibits a mean refractive index for the mechanical energy which is higher than that of the envelope.

3,824,506

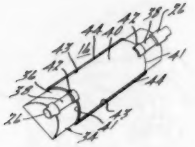
MICROWAVE ATTENUATORS

Helmut Bacher, Ann Arbor, Mich., assignor to Midwest Microwave Inc., Ann Arbor, Mich.

Continuation of Ser. No. 208,093, Dec. 15, 1971. This application May 22, 1973, Ser. No. 363,178

Int. Cl. H01p 1/22

U.S. Cl. 333—81 A 45 Claims



A microwave coaxial attenuator having a centrally disposed arcuate resistive layer with opposite axial ends thereof in electrical contact with a pair of center conductors and a pair of side ends in electrical contact with an outer ground conductor.

3,824,507

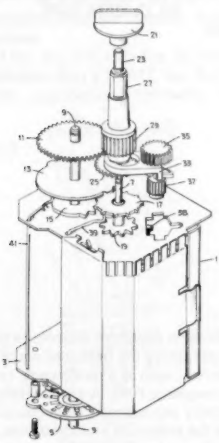
PARITY OF TUNING APPARATUS

Walter Franklin Speer, Speedway City, and Lloyd Edward Reed, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,297

Int. Cl. H03j 5/00

U.S. Cl. 334—47 10 Claims



A television tuning apparatus which provides a single selector shaft for selecting channels in both the VHF and UHF bands wherein the single selector shaft is coupled to a conventional VHF rotary mechanical detent switch tuner and to a switch connected to a series of preset potentiometers which provide tuning voltages for a varactor UHF tuner. The apparatus sequentially selected VHF channels and UHF channels maintaining a uniformity of tuning ease throughout both bands of tuning.

3,824,508

ELECTROMAGNETIC REPULSION DEVICE ACTUATING THE MOVABLE CONTACT MEMBER OF A CIRCUIT INTERRUPTER

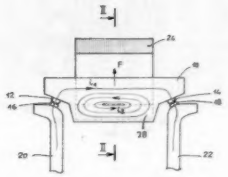
Claude Terracol, Grenoble, France, assignor to MERLIN GERIN Societe Anonyme, Grenoble, France

Filed May 21, 1973, Ser. No. 362,267

Claims priority, application France, May 26, 1972, 72.19239

Int. Cl. H01h 77/02

U.S. Cl. 335—16 12 Claims



Electromagnetic repulsion device comprising a magnetic circuit energized by the current flowing through a circuit interrupter and an induction-plate which is movable with the movable contact member of the circuit interrupter. The abrupt rising of a fault current induces secondary currents in the induction-plate to vigorously expel the induction-plate from the air gap of the magnetic circuit in which it is normally located when the circuit interrupter is in the closed-circuit position so that the contacts are rapidly opened.

3,824,509

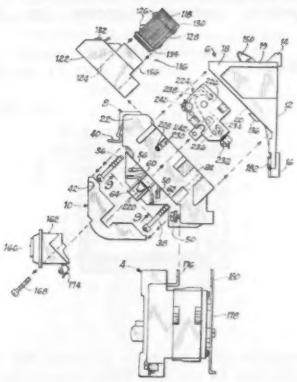
MAGNETICALLY OPERATED ELECTRIC SWITCH DEVICE

Robert L. McGary, Batavia, Ill., assignor to Furnas Electric Company, Batavia, Ill.

Filed May 17, 1972, Ser. No. 254,044

Int. Cl. H01h 50/04

U.S. Cl. 335—132 21 Claims



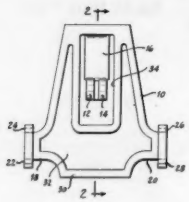
An electromagnetically operated switching device in which movable contacts move along lines extending downwardly at an acute angle to the horizontal to engage and disengage fixed contacts. An electromagnet is mounted in the housing oriented so as to have the main axis of the magnetomotive force thereof act along a line extending downwardly at an angle from a housing wall intended to be mounted vertically and an armature is connected to the movable contact guided so as to move along the same line.

3,824,510

MECHANICAL INTERLOCK FOR ELECTRIC SWITCHES

Arthur F. Kolb, Mequon, and John J. Gilmore, Grafton, both of Wis., assignors to Cutter-Hammer, Inc., Milwaukee, Wis.

Filed July 19, 1973, Ser. No. 380,564
Int. Cl. H01h 9/26
U.S. Cl. 335—160 2 Claims



An inexpensive thermoplastic interlock member which spatially aligns, anchors and mechanically interlocks the operation of a pair of electrical relays.

The interlock is a compact one piece member comprising a frame, anchorage means for anchoring the frame between two relay assemblies, each relay assembly having a respective armature, and an interlock element suspended within the frame by an integral flexible link for movement laterally of the frame, to prevent simultaneous actuation of the relay armatures.

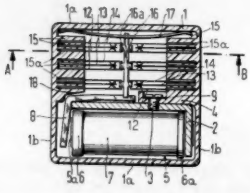
The interlock element has inclined surfaces extending laterally of the frame and into the paths of movement of the two armatures so that the interlock element is laterally displaced to obstruct the path of movement of one armature whenever the other engages the inclined surface thereof.

3,824,511

ELECTROMAGNETIC RELAY

Martin Aidn, and Alois Ruhland, both of Muenchen, Germany, assignors to Siemens AG., Berlin & Munich, Germany

Filed Apr. 12, 1973, Ser. No. 351,103
Claims priority, application Germany, Apr. 17, 1972, 2218494
Int. Cl. H01h 13/04
U.S. Cl. 335—202 10 Claims



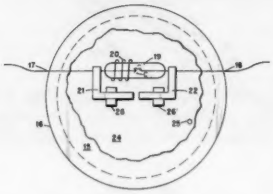
Electromagnetic relay having a relatively thin insulating member as the base for the relay which forms a mounting for the electromagnet, armature and relay contacts. The contacts for the relay comprise a series of sets of contact springs. Each set of contact springs is spaced along the base and arranged on opposite sides of an acutator member for the contacts and made from insulating material. The contact springs are assembled in the insulating member by merely sliding the springs into position in the base with all of the contacts arranged in a common plane, to provide a relay which may be readily assembled and is of minimum height and has all of the parts of the relay mounted on the base and readily accessible.

3,824,512

MAGNETIC SELF-LATCHING PRESSURE SWITCH

Floyd M. Glass, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 14, 1973, Ser. No. 415,912
Int. Cl. H01h 35/32
U.S. Cl. 335—205 3 Claims



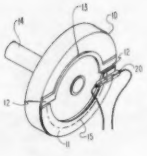
A pressure-operated switch is provided that will maintain closure indefinitely until it is reset electrically. A permanent magnet is positioned close to a reed relay switch in response to a shock wave and the magnet acting in conjunction with two pole pieces effects the closing of the switch which then remains closed even when the shock wave no longer exists. The switch may then be reset to an open position by means of an electrical coil encompassing the reed switch.

3,824,513

POSITION INDICATION APPARATUS

George Toney Webb, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,666
Int. Cl. H01h 36/00
U.S. Cl. 335—207 9 Claims



A position indication apparatus including a permanent magnet, a shunt for steepening the field gradient of the permanent magnet, and a device, such as a reed switch, responsive to the presence of the magnetic field. A substantially thin, substantially high coercivity permanently magnetized material occupies a portion of the surface of a circular base, such as a disc. At one edge of the magnetic material is mounted a substantially thin shunt comprised of a relatively soft magnetic material. The shunt substantially steepens the magnetic field gradient near this edge of the permanent magnet, thereby causing a substantially steeper drop-off in field intensity beyond the edge of the permanent magnet. A reed switch is positioned in parallel, spaced relation to the permanent magnet to be activated by movement of the magnet through a predetermined zone with respect to the reed switch. The zone can be substantially decreased dimensionally by the addition of the shunt, thereby greatly increasing the accuracy of the combination for use as a position indication apparatus.

3,824,514

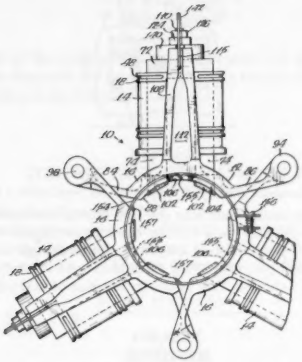
CONVERGENCE MAGNET AND HOUSING ASSEMBLY

Donald G. Hojnacki, McHenry, Ill., assignor to Coilcraft, Inc., Cary, Ill.

Continuation-in-part of Ser. No. 103,710, Jan. 4, 1971. This application Mar. 29, 1973, Ser. No. 346,138

Int. Cl. H01f 7/00

U.S. Cl. 335—210 21 Claims



A low cost convergence magnet and housing assembly having the advantages of small size, simplicity, superior cooling, superior adjustment to varying kinescope neck sizes, stability against jarring or shock, cheapness, and security of terminal wires and their connections to winding leads.

3,824,515

SCREENING CAGE

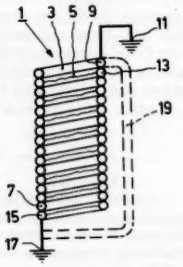
Benedictus Timotheus Johannes Holman, Emmasingel, Eindhoven, Netherlands

Continuation of Ser. No. 110,457, Jan. 28, 1971, abandoned. This application May 12, 1972, Ser. No. 252,938

Claims priority, application Netherlands, Feb. 18, 1970, 7002232

Int. Cl. H01f 5/00

U.S. Cl. 335—213 4 Claims



Electric screening cage comprising multifilarly helically wound wires connected to earth so that the earth-connected ends of each pair of adjacent wires are located at opposite ends of the cage.

3,824,516

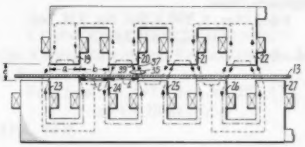
ELECTROMAGNETIC MATERIAL HANDLING SYSTEM UTILIZING OFFSET POLE SPACING

Sander Benowitz, 1537 Bedford Ave., Sunnyvale, Calif. 94087

Filed Feb. 5, 1973, Ser. No. 329,587

Int. Cl. H01f 13/00

U.S. Cl. 335—284 13 Claims



A technique of moving electrically conductive non-magnetic particles wherein a plurality of electromagnets are positioned on either side of an air gap with each electromagnet facing a non-magnetic space between electromagnets on the opposite side of the air gap. The electromagnets are energized with polyphase current in a manner to generate a sweeping magnetic flux down the air gap for moving particles therealong. Eddy currents generated by one magnetic field relative phase reacts with flux of another magnetic field relative phase to provide motion of the article. Two specific utilizations of this technique are described; the separation of conductive non-magnetic particles from waste material and the movement of aluminum can lids.

3,824,517

INDUCTOR HAVING A MAGNETIC CASING FORMED BY STACKED STAMPINGS

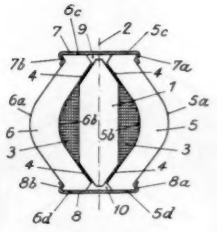
Jean-Marc Hess, Chamalieres, and Adolph Knop, Orcines, both of France, assignors to Constructions Electrotechniques du Certre, Blahzat, France

Filed Feb. 26, 1973, Ser. No. 335,849

Claims priority, application France, Feb. 28, 1972, 72.06669; Jan. 17, 1973, 73.01545

Int. Cl. H01f 27/26

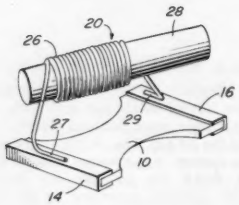
U.S. Cl. 336—83 16 Claims



An inductor comprises a central core 1 having bevelled upper and lower edges. The core is surrounded by a coil or winding 3, and the magnetic circuit is completed by complimentary half shells 5 and 6 that surround the coil and mate with the bevelled core edges but which are separated therefrom by compressible films 4. Flanged assembly brackets

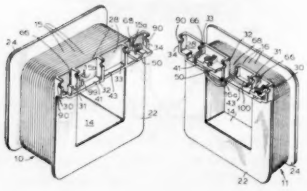
7 and 8 complete the structure and may be inwardly pinched to compress the films and thereby adjust the inductance value to a desired level. The void spaces 9 and 10 at the top and bottom of the core help to channel the flux through the shells 5 and 6.

3,824,518
MINIATURIZED INDUCTIVE COMPONENT
Stephen A. Slenker, Tyngsboro, Mass., assignor to Piconics, Inc., Tyngsboro, Mass.
Filed Mar. 5, 1973, Ser. No. 338,265
Int. Cl. H01f *15/02*
U.S. Cl. 336—96 **7 Claims**



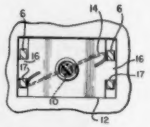
There is disclosed an inductive component including a ceramic substrate having metalized strips affixed thereto, an inductive element preferably in the form of a coil wound upon a ferrite core attached to the strips, and an epoxy encapsulent enclosing the inductive element and forming with the ceramic substrate a unitary inductive component. The substrate is constructed with oppositely sloping walls arranged to provide an interlocking dovetail arrangement with the encapsulent thereby providing an improved bonding therebetween to prevent separation between the substrate and encapsulent when the component is soldered in a circuit.

3,824,519
COIL FORMS AND TERMINAL
Imrich M. Miller, Paterson, N.J., assignor to Universal Manfuacturing Corporation, Paterson, N.J.
Filed Feb. 16, 1973, Ser. No. 333,222
Int. Cl. H01f *15/10, 27/28*
U.S. Cl. 336—192 **12 Claims**



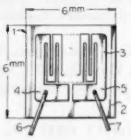
A coil form with an integrally formed terminal boards which is adopted to mate with another form having a similar terminal board to form enclosed, electrically insulated compartments. A crimp-solder terminal formed by a coil of wire is also provided.

3,824,520
ELECTRIC FUSE HAVING BLOWN FUSE INDICATOR
Edward J. Knapp, Jr., Newburyport, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed Dec. 12, 1973, Ser. No. 424,042
Int. Cl. H01h *85/12*
U.S. Cl. 337—161 **5 Claims**



The spring-biased indicator pin of a blown fuse indicator is normally restrained by a fusible element arranged with the preponderant portion of its length in a plane at right angles to the axis of said pin, projecting through a bore in said pin and subjected to a shear-action by the spring-bias of said pin.

3,824,521
RESISTOR
Kazuo Horii, Funabashi; Kazuo Ohya, Yachiyo; Matuo Zama, Tokyo, and Hiroyuki Takashina, Kawasaki, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Sept. 24, 1973, Ser. No. 400,345
Int. Cl. H01c *1/02*
U.S. Cl. 338—275 **6 Claims**

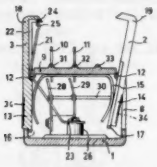


An improved thin-film resistor low in the resistance temperature coefficient is provided. A metal film or foil is bonded with a thermosetting resin onto an insulating base plate having a lower linear expansion coefficient than the metal and is etching-processed so as to be of a desired resistance pattern. The difference in the linear expansion coefficient between the metal and the insulating base is selected to be 26 to 66 $\times 10^{-7}$/°C. The metal and base are covered with a resin so as to be a molded assembly, together with lead wires connected to both ends of the metal.

3,824,522
CURRENT ADAPTOR
Johannes Kurt Bertrams, deceased, late of Hilden, Germany, and Casper Antonius Henricus Mulkens, administrator, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 13, 1973, Ser. No. 340,768
Claims priority, application Netherlands, Mar. 18, 1972, 7203661
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **4 Claims**

The invention relates to a current adaptor which can be connected to a current supply rail. The current adaptor comprises a housing with grips on either side whose free ends are

bent in the form of a hook so as to grip around the current supply rail. The grips are hinged to the housing and those sides



of each of the grips which extend beyond the pivot viewed from the free end, are pressed apart with the aid of a spring incorporated in the housing.

3,824,523

CONTACT RETENTION ASSEMBLY

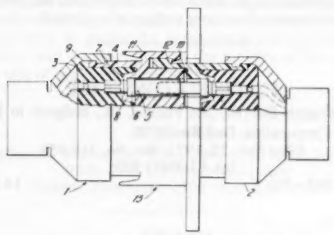
Michael J. McGhee, Basingstoke, England, assignor to ITT Industries, Inc., New York, N.Y.

Continuation of Ser. No. 233,622, March 10, 1972, abandoned. This application June 21, 1973, Ser. No. 371,958

Claims priority, application Great Britain, Mar. 12, 1971, 6650/71

Int. Cl. H01n *13/40*

U.S. Cl. 339—59 R **8 Claims**



A two-part connector assembly wherein the elements are latched together by a latch on one element which latches to a notch on the other element. The latch, in cross-section, is T-shaped. To release, pressure is applied to one arm of the T to rock it about the shank of the T, which is integral with the casing. The contacts are rear-clip insertion and extraction types, with the tines for contact retention integral with the inside of the bore in which the contact is located.

3,824,524

ELECTRICAL CONNECTOR ASSEMBLY

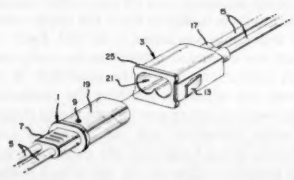
Douglas Wade Glover, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 31, 1973, Ser. No. 328,186

Claims priority, application Great Britain, Mar. 12, 1971, 6650/71

Int. Cl. H01r *13/52*

U.S. Cl. 339—60 R **3 Claims**



The disclosure relates to a high voltage connector for installation in a panel cutout in the field, wire connection to the connector being made by crimping individual wires to individual contact members and locking each of the contact members into the connector housing by means of locking tines on the contact member and shoulders in the housing. The housing further includes a pair of ears for locking the housing into the panel and a flange on each housing portion to hold the housing portions together when mated. The connector is formed from polarized male and female members which connect together.

3,824,525

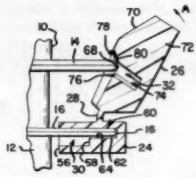
CONNECTOR LATCH ASSEMBLY

Alfred John Keller, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 11, 1972, Ser. No. 288,170

Int. Cl. H01r *13/54*

U.S. Cl. 339—91 R **13 Claims**



This invention relates to a connector latch assembly comprising a pair of identical latches adapted to simultaneously secure a pair of mated connectors one to the other. Each latch includes a base member slidably engaged with an end of the mounting flange of one of the connectors and an integral hinged member selectively engageable with the corresponding end of the mounting flange of the other connector.

3,824,526

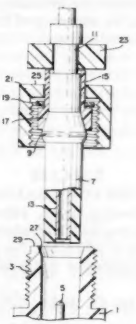
POSITIVE STOP HIGH VOLTAGE CONNECTOR

Douglas Wade Glover, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 31, 1973, Ser. No. 328,187

Int. Cl. H01r *13/52*

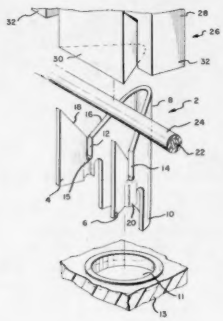
U.S. Cl. 339—94 R **10 Claims**



The disclosure relates to a high voltage connector which includes a cylindrical insulator provided with a radial flange having an outer portion in the form of an O-ring molded thereon, the insulator and a mating receptacle providing positive stop means in the movement of the mating elements to prevent undue strain against and breaking of the flange. The disclosure also describes a threaded cap rotatable about the

insulator and cooperating with threads on the receptacle for fastening them together, the insulator having a stop member for preventing removal of the cap. There is also provided a washer of low friction material between the cap and a ferrule on the insulator to avoid rotation of the ferrule while threading the cap onto the receptacle.

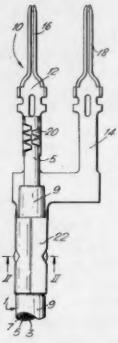
3,824,527
WIRE-IN-SLOT ELECTRICAL CONNECTIONS
William Robert Evans, Hummelstown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 3, 1972, Ser. No. 277,839
Int. Cl. H01r *13/38*
U.S. Cl. 339—97 R **15 Claims**



Electrical connecting device comprises a generally V-shaped member having wire receiving slots extending into corresponding side edges which are adjacent to the bight of the V. The plate sections of the V are preferably kinked in alignment with the slots. Upon insertion of a wire, the plate sections are resiliently stressed by the wire in a manner to cause them to move towards each other. Additionally, the individual plate sections may be flexed by stressing of the kinked sections in the manner of a cylindrical spring.

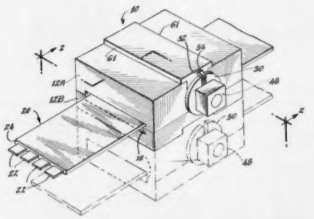
3,824,528
CONNECTOR FOR COAXIAL CABLE
Wilhelm Çornelis Johannes Esser, Tilburg, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.
Filed May 4, 1973, Ser. No. 357,302
Claims priority, application Netherlands, May 16, 1972, 7206575
Int. Cl. H01r *11/20*
U.S. Cl. 339—97 C **4 Claims**

An electrical connector including a contact member for connection to an outer stranded conductor of a coaxial cable having an inner conductor and a dielectric separating the inner conductor from the outer stranded conductor, the contact member including a pair of spaced sidewalls interconnected by a base to define a generally U-shaped ferrule, a lance formed from each sidewall and extending inwardly of the sidewall at an acute angle in a direction away from the base, the lances being positioned opposite each other and, when the ferrule is crimped about the coaxial cable, each



lance piercing and passing between the strands of the outer stranded conductor so that some of the strands are positioned between a lance and an inner surface of a sidewall.

3,824,529
FLAT CABLE CONNECTOR
Robert Francis Dorrell, Des Plaines, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.
Filed Nov. 28, 1972, Ser. No. 310,059
Int. Cl. H01r *9/06*
U.S. Cl. 339—99 **10 Claims**



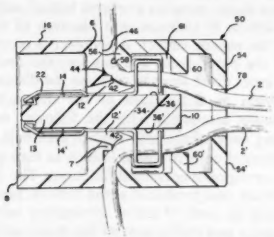
This invention provides a connector for flat multiconductor cable. Cables to be connected are inserted in slots on opposite sides of a housing, there being an upper and a lower contact adjacent the slot for each cable conductor to be mated. There is an eccentrically mounted cam for each upper contact which cams are commonly actuated to force the upper contacts into engagement with cable positioned in the slot. Each upper and lower contact has a pointed projection for each cable to be joined which projections pierce the insulation of the cable when the cams are actuated, pinching the conductor of the cable therebetween to assure good physical and electrical contact of the cable connector with the connector contacts. If there is a metalic ground shield on the cable, an extra pair of contacts are provided adjacent the slot which contacts have teeth for engaging the shielding. A cam is provided for the upper of the shield engaging contacts which cam is operated by the same means as the other cams of the connector.

3,824,530

INSTALLATION OF ELECTRICAL CONNECTORS ON WIRES INTERMEDIATE THE ENDS THEREOF

Lincoln Edwin Roberts, Winston-Salem, and John Robert Shoemaker, Walkertown, both of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 5, 1972, Ser. No. 312,395
Int. Cl. H01r 9/00
U.S. Cl. 339—99 R 6 Claims



Electrical connector having wire-in-slot electrical connecting means therein is applied to conductors intermediate the ends of the conductors. A cover or clamp is removably secured to the rearward side of the connector and functions to hold the conductors in the wire-receiving slots of the contact terminals which are contained in the connector. The cover also functions to gather the wires which extend towards the connector and confine them in the vicinity of the rearward end or side of the connector.

ERRATA

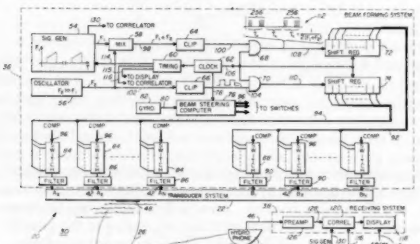
For Classes 339—128, 339—198, 339—221, 339—246, 339—268 and 339—258 see:
Patents Nos. 3,824,552 thru 3,824,557

3,824,531

PLURAL BEAM STEERING SYSTEM

George M. Walsh, Middletown, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 15, 1973, Ser. No. 323,602
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R 13 Claims



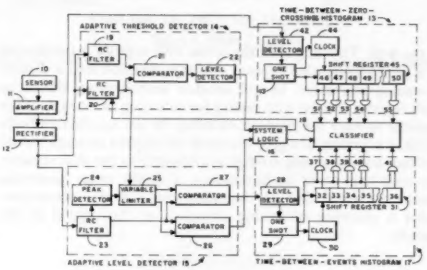
A system for forming and steering beams of radiation at a plurality of frequencies radiated into a medium capable of producing a nonlinear reaction between these beams resulting in a radiant energy signal having a resultant frequency equal to an arithmetic combination of the radiated frequencies. The beam forming is accomplished by an array of radiating elements arranged preferably in a random fashion to produce a directivity pattern having a main lobe while minimizing the magnitudes of side lobes. The steering is accomplished by variable delay lines coupled between a source of signals at the radiated frequencies and the array of radiating elements providing for individual delays to each of these radiating elements so that each of the beams can be steered with individually controllable steering angles. The delays are varied in accordance with command signals from a beam steering computer to direct the main lobes of the radiation patterns through a common region of the medium as the beams are scanned, this resulting in a scanned beam at the resultant frequency. The signal resulting from the nonlinear reaction may be correlated with a replica thereof, the replica being generated in conjunction with the two radiated frequencies.

3,824,532

SEISMIC SIGNAL INTRUSION DETECTION CLASSIFICATION SYSTEM

Albert J. Vandierendonck, Minneapolis, Minn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 27, 1971, Ser. No. 184,239
Int. Cl. G08b 13/00
U.S. Cl. 340—15 5 Claims



An intrusion detection system for detecting and classifying intrusions into a protected area by recognizing their characteristic patterns of seismic disturbances. A sensor produces an electrical signal representative of seismic disturbances created by an intrusion. Signals that surpass a predetermined level constitute an event. These signals are introduced to a histogram circuit that operates to determine the time between these events and to transmit a pulse to a classifier indicating each such time. The classifier generates a plurality of analogue signals each of which individually represents by its amplitude the sum of the pulses falling within a particular time between events pattern. Each pattern is characteristic of a particular type of intrusion such as aircraft, ground vehicle, human, nuisance, etc.

3,824,533

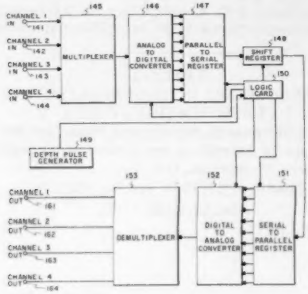
DIGITAL COUNT RATE METER AND DEPTH DELAY SYSTEM FOR WELL LOGGING

Gerald P. Adamson, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sept. 18, 1972, Ser. No. 289,903
Int. Cl. G01v 1/40
U.S. Cl. 340—18 DC 2 Claims

Electrical signals from a well logging instrument are coupled to the earth's surface where circuitry is provided for a series of common depth point correlations. In one embodiment, the digitized signals drive an eight-bit counter which is gated through eight respective buffer circuits to eight serial shift registers. The signals in the eight-bit counter section are clocked

out to the buffer section once each second regardless of movement of the well logging instrument in the borehole. The signals are shifted from the shift register at the rate of four bits per foot of well logged into a digital-to-analog converter. The amount of delay within the circuit is a function of the number of bits in the shift register divided by the number of depth pulses per foot of well logged. In an alternative embodiment, the analog signal to be delayed is converted to a parallel ten-bit digital signal which is then converted to a series signal which is coupled into a serial shift register. The conversion process is a function of depth pulses relating to the number of feet logged



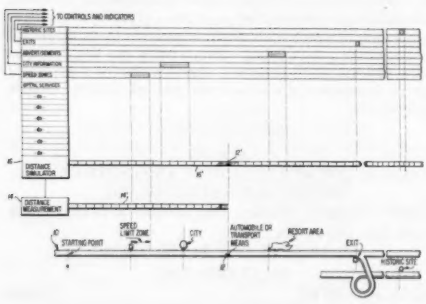
in the well. The output of the serial shift register is connected to a series-to-parallel register which is coupled into a digital-to-analog converter. In still another embodiment, the serial shift register is used with means for selecting the length of the register to vary the amount of delay. In yet another embodiment, a plurality of signal channels is coupled through a multiplexer and an analog-to-digital converter to the shift register. As with the other embodiments, a depth pulse generator clocks the pulses through the system and a demultiplexer provides a plurality of analog channels at the output of the system.

3,824,534

GUIDANCE AND INFORMATION SYSTEM FOR MOBILE OBJECTS

O. Robert Straumsnes, 18 Walworth Ter., White Plains, N.Y. 10606

Filed Aug. 12, 1971, Ser. No. 171,293
Int. Cl. B60r *27/00*
U.S. Cl. 340—24 **21 Claims**



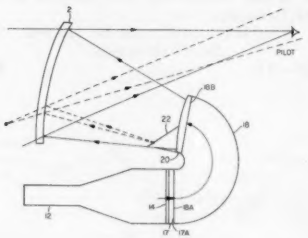
A guidance and information system for mobile objects includes an elapsed distance simulator responsive to the actual distance of travel of a mobile object for generating desired control functions at predetermined positions along a known path of travel. The distance simulator comprises a fixed cylindrical drum having a helical track thereon with a scale having gradations corresponding distances, e.g., mileage, along the path of travel. Control elements are selectively positioned along the track at desired, predetermined locations corresponding to predetermined distances along the path of travel of the mobile object, and which elements respectively relate to desired control functions to be generated when the mobile object reaches that predetermined position in its travel. A rotatable cylindrical drum, received concentrically within the first drum, includes a reverse helical path on its surface and is driven in rotation as a function of the distance travelled by the mobile object. A follower is received within the track of the outer drum and engages the reverse helical track of the inner drum so as to traverse the distance track of the outer drum as a function of the distance travelled. Switching means associated with the follower are actuated upon engaging each of the said control elements, thereby to generate electrical control signals which in turn produce the associated, corresponding control functions. The desired control functions are thus produced at the desired, predetermined positions along the path of travel. Exemplary such functions include guidance and traffic control functions, such as related to permissible speed limits, direction of travel and the like, information regarding points of interest along the path of travel, such as resort areas and historical sites, or general information regarding a city being approached along the path of travel, commercial advertisements which may be interspersed among the other message and control functions, or any other desired matters.

3,824,535

HEAD-UP DISPLAY APPARATUS INCLUDING MEANS FOR DISPLAYING THREE DIMENSIONAL AIRCRAFT VERTICAL PATH LINE

Ralph R. Rover, Jr., Cresskill, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 28, 1972, Ser. No. 293,221
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 NA **8 Claims**



In combination with head-up display apparatus for displaying aircraft navigational symbology to the pilot of the craft as a real world infinity overlay, means for displaying a three dimensional aircraft vertical path line appearing to the pilot to extend from a point just forward of the craft on out to infinity.

3,824,536

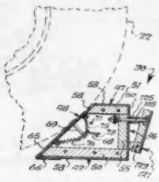
WHEEL BLOCKING ALARM AND INDICATING SYSTEM

John R. Cherico, 508 Breckenridge St., Buffalo, N.Y. 14213

Filed May 1, 1972, Ser. No. 249,387
Int. Cl. B60q *7/00*
U.S. Cl. 340—52 R **11 Claims**

A wheel blocking alarm and indicating system comprising a blocking member adapted to be placed in blocking engage-

ment with a vehicle wheel, first sensing means in the form of switching means on the blocking member adapted to be contacted and operated by the wheel, and electrically operated indicating means connected to the switching means for providing an alarm indication when the blocking member is not placed in blocking engagement against the wheel and for providing an indication of safety when the switching means is operated when the blocking member is placed in blocking engagement against the wheel. The indicating means can be



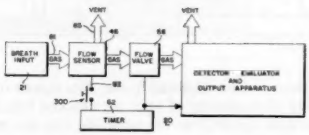
located remote from the blocking member such as inside a loading dock for wheeled freight carriers. A second sensing means in the form of switching means is provided on the blocking member and is connected to the indicating means to provide an alarm indication when the blocking member is not received in a storage means provided separate from the blocking member and when the blocking member is not placed in blocking engagement against the wheel.

3,824,537

ANTI-EVASION SYSTEM FOR VEHICLE UNSUPERVISED BREATH TESTERS

Clarence E. Albertson, Villa Park, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 25, 1972, Ser. No. 257,030
Int. Cl. G08b *21/00*
U.S. Cl. 340—53 **4 Claims**



A system for discouraging attempts at evasion of an unsupervised vehicle operator breath tester employing a free hand station (e.g. pushbutton on dash) which must be activated during a test period. In one embodiment this station directly allows the test to be completed and in another embodiment it does so indirectly using the transmittal of a signal from the station to the breath input unit through the user to allow passing of the test. Absence of such a signal indicates that the user is not contacting both the station and breath input and may be attempting to avoid the test.

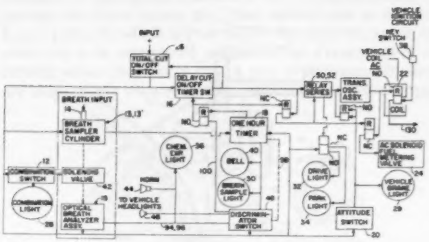
3,824,538

MOTOR VEHICLE OPERATOR MONITORING SYSTEM

Cecil Slemp, Jarrettsville, Md., assignor to Shelcy Mullins, Wise, Va., a part interest

Filed June 8, 1973, Ser. No. 368,229
Int. Cl. G08b *21/00*
U.S. Cl. 340—53 **26 Claims**

A motor vehicle operator monitoring system having control interlocks to disable an operated vehicle in graduated stages when the vehicle operator is found to have impaired faculties, including a system insuring that the operator periodically submits to testing on penalty of vehicle disablement, a system as-



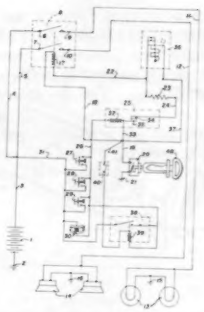
sessing test results, a system responsive to unsatisfactory test results to warn the vehicle operator, the public, and to bring the vehicle to a safe gradual stop taking terrain into account.

3,824,539

VEHICLE TAMPER ALARM SYSTEM

Paul J. Horvath, 6956 Quebec St., Vancouver, British Columbia, Canada

Filed Jan. 10, 1973, Ser. No. 322,512
Int. Cl. B60r *25/10*
U.S. Cl. 340—65 **3 Claims**



An alarm network for incorporation in a vehicle having a battery, horn and headlights, in which a relay switch is provided controlling the power supply from the battery to the horn and headlights. The relay has a control circuit with which a flasher switch is associated so as to cause repeated opening and closure of the relay switch, a thermally responsive cutout switch, and various tamper responsive switches which close upon interference with the vehicle in an anticipated manner. A master switch is also provided in association with the vehicle door lock, the master switch being operable by rotation of a key in the lock.

3,824,540

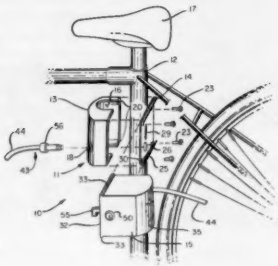
BICYCLE LOCK AND ALARM APPARATUS

Kobert Reynierson Smith, II, Ryco, One First St., Los Altos, Calif. 94022

Filed July 27, 1972, Ser. No. 275,802
Int. Cl. B60r *25/10*; **G80b** *21/00*
U.S. Cl. 340—63 **2 Claims**

A bicycle lock and alarm apparatus for use as a preventive or deterrent device in controlling bicycle thievery. A continu-

ous cable adapted to extend through the bicycle wheels and also about the bicycle frame to immobilize the wheels and locking means to join the ends of the cable to form a loop. An



electrical circuit including an electrical conductor running through the length of the cable and responsive to interruption of the conductor for activating an alarm.

3,824,541

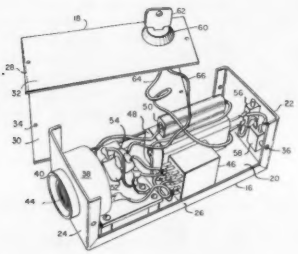
ANTI-THEFT DEVICE FOR BICYCLES AND THE LIKE

Robert W. Nolan, 97 Madison Ave., Newtonville, Mass. 02160

Filed Nov. 15, 1972, Ser. No. 306,894

Int. Cl. G08b *13/00*

U.S. Cl. 340—65 **1 Claim**



An alarm device mountable to the frame of a bicycle or the like is adapted to emit a highly audible sound if the bicycle is removed from a parked position. The device includes a sound generating unit powered by batteries with a pair of angularly positioned mercury switches adapted to actuate the alarm through a latching relay circuit upon unauthorized movement of the bicycle. The components are contained in a housing attached to the bicycle frame and a key-operated lock switch is employed to arm the device when left in a parked position by the bicycle owner.

3,824,542

ELECTRONICALLY CONTROLLED TWO-TERMINAL FLASHER UNIT

Bruno Schorter, Savigny-sur-Orge, France, assignor to U.S. Philips Corporation, New York, N.Y.

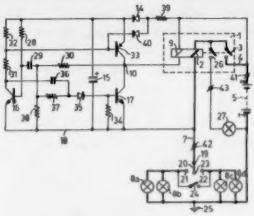
Filed Mar. 31, 1972, Ser. No. 240,190

Claims priority, application France, Apr. 9, 1971, 71.12790

Int. Cl. B60q *1/38*

U.S. Cl. 340—81 R **11 Claims**

An electronically controlled two-terminal automatic flasher unit for the directional signal lamps of a motor vehicle. The flasher unit includes an astable multivibrator with supply leads connected to a capacitor. The multivibrator alternately connects a relay energizing winding to each of the supply leads. A diode is serially connected with the capacitor across the two terminals of the flasher, as is a hold winding on the relay and a



relay contact. The flasher unit can be installed without a change in the wiring system and can perform the vehicle alarm function.

3,824,543

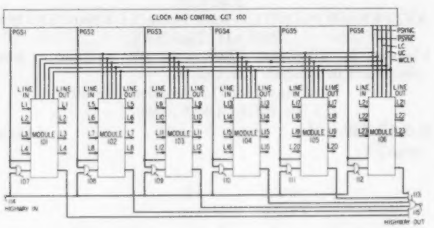
DIGITAL DATA INTERCHANGE CIRCUIT FOR A MULTIPLEXER/DEMULTIPLEXER

Michael Peter Cichetti, Jr., Staten Island, N.Y., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 26, 1973, Ser. No. 373,633

Int. Cl. H04q *1/00*

U.S. Cl. 340—147 CN **19 Claims**



During a time-division highway frame, data signals from the incoming side of a plurality of lines are clocked into line registers while data signals from the incoming side of a two-way time-division highway previously stored in the line registers are clocked out to the outgoing side of the lines. At the same time, data signals from the incoming side of the time-division highway are distributed to the several portions of a highway register while data signals from the incoming lines previously stored in the highway register portions are transmitted to the outgoing side of the time division highway. After being distributed to a group of highway register portions, the data signals are recirculated through successive portions of the group while subsequent data signals are being distributed to the remaining groups of highway register portions. The data signals in the line registers and in the highway register portions are serially interchanged at the highway data rate while synchronizing signals are transmitted to the highway.

3,824,544

MERCHANDISING ARRANGEMENT UTILIZING A CODED CHECK

Luther G. Simjian, 7 Laurel Ln., Greenwich, Conn. 06830

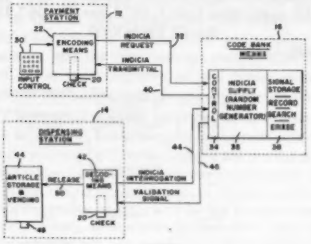
Filed Apr. 13, 1973, Ser. No. 350,902

Int. Cl. G06k *5/02*

U.S. Cl. 340—147 A **4 Claims**

The invention concerns a merchandising arrangement in which a coded check is used. Upon the issuance of the check

the code of the check is stored in a storage means. For obtaining purchased articles of merchandise the check is presented to a decoding means which sends a signal corresponding to the code to the storage means. If the storage means contains the

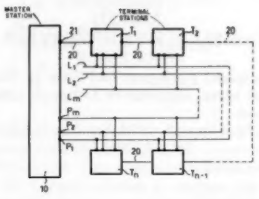


code, the check is validated and the code is erased from the storage means. Random number generators and other features are disclosed to make the code unpredictable or not available to unauthorized personnel.

3,824,545
ARRANGEMENT FOR COLLECTING AND/OR DISTRIBUTING INFORMATION VIA TRANSMISSION LINES

Jean Yves Rene Lucien Brenner, Savigny/Orge; Didier Jean Mougel, Arcueil, and Alain Jacques Himmelbauer, Hay-Les-Roses, all of France, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,979
Claims priority, application France, Nov. 5, 1971, 71.39787
Int. Cl. H04q *9/14*
U.S. Cl. 340—151 **3 Claims**



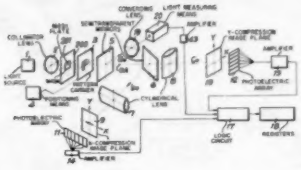
An arrangement for collecting and/or distributing information, comprising a master station and a number of terminal stations, each terminal station being connected to the preceding terminal station via a transmission line, the first terminal station being connected to the master station. All terminal stations are connected to the master station via a number of collecting lines. By transmission of a pulse on the transmission line, the information which is transmitted by the terminal stations to the master station or vice versa is successively received on the collecting lines.

3,824,546
PATTERN RECOGNIZING SYSTEMS

Harumi Kawasaki, and Tohru Nakajima, both of Tokyo, Japan, assignors to Apahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Jan. 14, 1973, Ser. No. 324,362
Claims priority, application Japan, Jan. 22, 1972, 47-8467
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 F **12 Claims**

A system for recognizing and identifying patterns in the form of letters, numerals, and the like. An image-forming structure is provided for forming an image of a pattern, which is to be recognized, in each of a pair of image planes. This image-forming means has an optical axis, and a positioning structure is operatively connected with a pattern carrier for moving the latter across the latter optical axis in order to locate patterns, which are carried by the pattern carrier and which are to be recognized, sequentially at a read position extending across the optical axis. A pair of photosensitive units are respectively situated in the regions of the above image

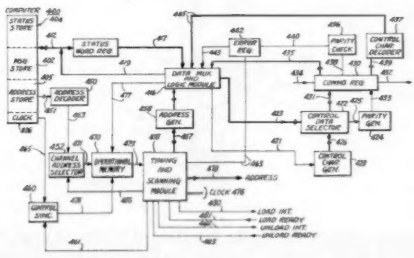


planes for responding to an image at the latter planes and for respectively detecting characteristics of the image in a pair of mutually perpendicular directions and then converting these characteristics into a pair of corresponding electrical signals which are respectively indicative of characteristics of a pattern along a pair of mutually perpendicular coordinates. A quantizing assembly is electrically connected with the pair of photosensitive units for quantizing the latter electrical signals into binary codes capable of identifying the pattern.

3,824,547
COMMUNICATIONS SYSTEM WITH ERROR DETECTION AND RETRANSMISSION

Wendel C. Green, Annandale, Va.; Charles W. Bebster; Patrick J. Sharkitt, both of Silver Spring, Md., and Richard R. Hayden, Washington, D.C., assignors to Sigma Systems, Inc., Arlington, Va.

Filed Nov. 29, 1972, Ser. No. 298,878
Int. Cl. G06f *11/10;* **G08c** *25/00*
U.S. Cl. 340—146.1 BA **11 Claims**



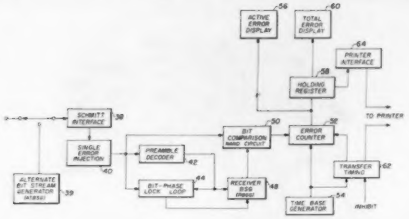
A bi-directional data communication system in which positive and negative acquisition signals are utilized to inform the transmitting station as to any errors in the reception of a message. The system employs both character parity and message parity error detection and each station contains buffer storage message areas for both transmitted and received messages. Messages are retained in the buffer storage areas until a positive acquisition pulse is received by the transmitting station. Upon receipt of a negative acquisition pulse, indicating an error in reception, the transmitting station retransmits the entire message stored in the buffer area. Timeout circuits are also provided to cause the transmitting messages to be repeated in the event of line distortion of the positive or negative acquistion pulses.

3,824,548

SATELLITE COMMUNICATIONS LINK MONITOR

Dean R. Sullivan, Lakeside, and James E. Pohl, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 15, 1973, Ser. No. 323,497
Int. Cl. H04b 1/00, 7/00; G08c 25/00
U.S. Cl. 340—146.1 E 4 Claims



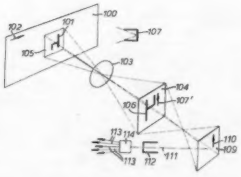
In satellite relay communication systems, apparatus for automatically measuring and indicating in real time, the absolute bit error rate introduced in a transmitted bit stream by the data link. In an exclusive test mode, a selectively predetermined random or fixed code sequence is transmitted over the link. At a receiver site, the identical, reference code sequence is generated for comparison, on a bit-by-bit basis, with the transmitted sequence after bit and code synchronization are completed.

3,824,549

OPTICAL CHARACTER RECOGNITION APPARATUS

Peter Ormonde Styan, and Stuart John Mason, both of Broadstone, England, assignors to Plessey Handel Und Investments A. G., Zug, Switzerland

Filed Nov. 29, 1971, Ser. No. 206,225
Claims priority, application Great Britain, Nov. 30, 1970, 56871/70
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 AC 18 Claims



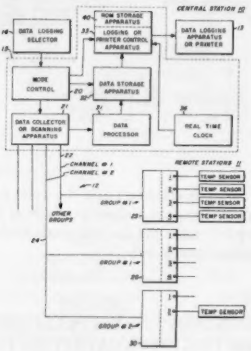
In an arrangement for the detection of horizontal edge and vertical stroke features of characters the character is scanned in the vertical direction using at least three scan lines and three instantaneous voltages corresponding to respective horizontally aligned scan points on the scan lines are derived having a magnitude in dependence upon the relative lightness or darkness of the points. The arrangement is such that a vertical stroke will be detected when the instantaneous voltage appertaining to points on the centre scanned line exceeds or otherwise differs significantly from each of the voltages appertaining to horizontally aligned points on the other two scanned lines whereas a horizontal edge will be detected when one or more of the voltages appertaining to horizontally aligned points on the scanned lines at one instant in the scanning cycle differs significantly from corresponding voltages derived at an adjacent time instant thereby indicating a change from a relatively light to a relatively dark region or vice versa in the direction of scanning.

3,824,550

READ-ONLY-MEMORY STORAGE APPARATUS FOR CONTROLLING DATA LOGGING APPARATUS

Frank H. W. Schoenwitz, Schaumburg, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 83,569, Oct. 23, 1970, abandoned.
This application June 7, 1973, Ser. No. 367,936
Int. Cl. H04q 9/00
U.S. Cl. 340—151 3 Claims



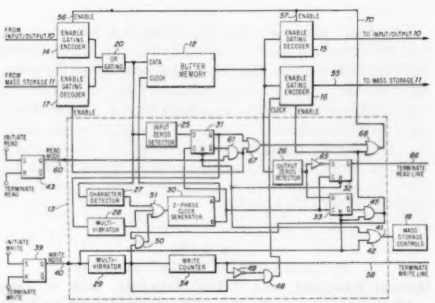
A supervision system has a central station connected to a plurality of remote stations wherein information obtained from the remote stations is logged or printed out on a data logging apparatus or printer in accordance with a format previously established. The printer has a control apparatus which is connected to be controlled by a program stored in a read-only-memory storage apparatus for establishing a format for the collected data to be printed.

3,824,551

RELEASABLE BUFFER MEMORY FOR DATA PROCESSOR

Genio R. Arciprete, Lexington, and Peter G. Martin, Arlington, both of Mass., assignors to Arthur D. Little Inc., Cambridge, Mass.

Filed May 18, 1972, Ser. No. 254,711
Int. Cl. G06f 11/00
U.S. Cl. 340—172.5 23 Claims



The invention is a buffer memory release system for an automatic data processor which incorporates a buffer memory interposed between an input/output device, e.g., a typewriter, and a mass data storage means, with the buffer memory and the mass storage means each adapted to store data blocks made up of a plurality of characters of which usually less than

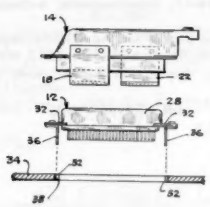
all are meaningful, i.e., data-bearing, characters. The meaningful characters are those characters (including spaces) that correspond to a typewritten line. The remaining characters of the data block correspond to blank or unused cells in the buffer memory and are considered to be blank or unused characters. The preferred embodiment of the invention is designed so that in the writing (i.e., recording) mode, the meaningful characters of a data block are emptied from the buffer memory into the mass storage means, followed by the writing of zeros representative of the blank cells (unused characters) in the buffer, and means are provided for making the buffer memory available for input of new data from the typewriter as soon as the writing of zeros commences. In the reading (i.e., playing-out) mode, means are provided for printing out characters from a block of data immediately after all of the meaningful characters in that data block have been transferred into the buffer memory from the mass storage means and without waiting until the recorded zeros that follow the meaningful characters are read out. This releasing of the buffer avoids delays in mechanical operations.

3,824,552

ELECTRICAL CONNECTOR ASSEMBLY

Edward Kirby, Des Plaines, Ill., assignor to TRW, Inc., Cleveland, Ohio

Filed May 25, 1972, Ser. No. 256,685
Int. Cl. H01r *13/54;* **H02b** *1/02*
U.S. Cl. 339—128 **5 Claims**



An electrical connector assembly adapted to be mounted to a support chassis by snap-in action, the assembly being provided with deflectable clip elements insertable into mating openings in the support chassis to engage the chassis and secure the assembly thereto, said clip element being deflectable to permit removal of the assembly from the chassis by displacement of the clip elements to a position where they will pass through the chassis openings upon said removal.

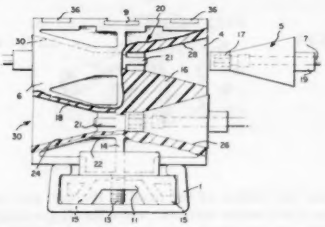
3,824,553

LOW VOLTAGE TERMINAL STRIP CAPABLE OF WITHSTANDING HIGH VOLTAGE TRANSIENTS

Dougles Wade Glover, Harrisburg; Mervin Amos Gardner, Highspire, and Erlon Fitch Johnson, Elizabethtown, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 22, 1973, Ser. No. 372,548
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 GA **2 Claims**

A terminal strip to provide for varying numbers and combinations of connections between input conductors and output conductors is disclosed. The strip is built up of any desired number of insulating block elements, each of identical structure, all mounted on a channel shaped track between end stops. The block elements have interlocking means and they define plural cavities with sets of contact terminals inside the cavities to which the conductors are terminated in desired patterns. Barrier wall sections subdivide the cavities and separate sets of terminals. The cavities are of pyramid shape, the electrical plug therefore being of the same pyramid shape to provide intimate contact between the walls of the cavities and the plug to increase the distance via air between contacts, High voltage surge conditions can be successfully withstood due to



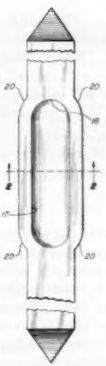
cavity spacings, post spacings, presence of barrier walls, and use of insulating material for all elements except the contact terminals. Access cover means and cavity identifying marker means are also provided.

3,824,554

SPRING-TYPE PRESS-FIT

Gordon D. Shoholm, Box 433, Grantsburg, Wis. 54840

Filed Aug. 28, 1972, Ser. No. 284,331
Int. Cl. H01r *9/08*
U.S. Cl. 339—221 R **3 Claims**



A spring-type press-fit section for anchoring and electrically connecting wire-wrap and other terminal pins which is capable of providing greater retention of terminal pins with a lower ratio of damage to the mating hole material than existing designs for use in military and commercial electronic and electrical equipment assemblies.

3,824,555

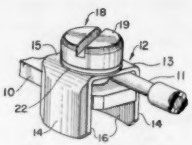
ELECTRICAL CONDUCTOR TERMINAL ASSEMBLY

Keith William Klein, Simsbury, and Joseph Michael Palmieri, Southington, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,127
Int. Cl. H01r *7/24*
U.S. Cl. 339—246 **2 Claims**

An assembly for making an electrical connection between a flat terminal strap and an aluminum conductor, comprising a

U-shaped saddle member including a pair of leg sections adapted to straddle the strap, a bolt captured in a free-turning relation in the bridging section between the leg sections and threadedly engaging the strap, a resilient washer positioned



between the bottom of the head of the bolt and the bridging section of the saddle member, and wherein the saddle member is aluminum and the leg sections of the saddle member are straight, parallel and of arcuate cross section.

3,824,556

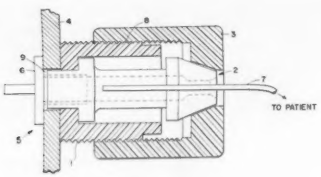
EXTRA-CORPOREAL MEDICAL INSTRUMENT ELECTRICAL CONNECTOR

Barouh V. Berkovits, Newton Highlands; Pieter J. Denouter, Marlboro, and Edward L. Lewis, Sharon, all of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Apr. 13, 1972, Ser. No. 243,717

Int. Cl. H01r *7/16*

U.S. Cl. 339—268 S **5 Claims**



An electrical connector for attaching wires extending from a patient to an extra-corporeal medical instrument — resilient electrically conductive jaws grip an axially inserted wire leading from the patient. A collet peripherally mounted on the jaws adjustably deforms them exerting a compressive clamping force on the wire. The collet and jaw assembly is appropriately keyed to a complementary aperture in the instrument panel and affixed thereto by a threaded locking member. The locking member is electrically conductive thereby forming a feed through of the instrument panel. As the locking member engages a complementary threaded portion on the distal end of the jaws a bearing force is applied thereby affixing the entire assembly to the panel.

3,824,557

ELECTRICAL CONTACT

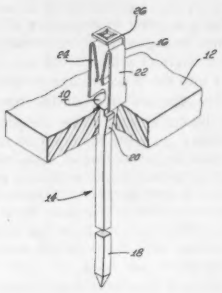
Marvin C. Mallon, Canoga Park, Calif., assignor to Interdyne Company, Van Nuys, Calif.

Continuation of Ser. No. 174,401, Aug. 24, 1971. This application July 13, 1973, Ser. No. 379,105

Int. Cl. H01r *7/28*

U.S. Cl. 339—258 R **3 Claims**

A free-standing, guided entry metallic one-piece female spring contact is provided which has particular utility in conjunction with integrated circuits. The contact is intended to be mounted, together with a multiplicity of similar contacts, in plated holes in a printed circuit board. The contact is formed to define two opposing spring leaves which receive the pins or tab-like male contacts, for example, of an integrated circuit



device. The contact also defines an integral apertured crown over the spring leaves which serves as a guide for the male contact.

3,824,558

AUTOMATIC APPARATUS FOR SEQUENCING REPAIR WORK IN OPTIMUM ORDER ON MALFUNCTIONS OF GROUPED OPERATING MACHINES

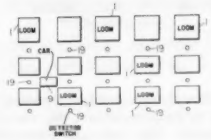
Heiji Koshiba, 14-17, Izuminomachi 6-chome, Kanazawa, Japan

Continuation-in-part of Ser. No. 73,694, Sept. 21, 1970, abandoned. This application June 28, 1972, Ser. No. 267,013

Claims priority, application Japan, Sept. 19, 1969, 44-74840

Int. Cl. G06f *11/00*

U.S. Cl. 340—172.5 **7 Claims**



Apparatus for use in a mill having a plurality of operating machines, wherein the apparatus includes sensing means for detecting machine malfunctions, memory means for determining the order in which repairs should be made to malfunctioning machines, and a repair operator's carriage having means for moving it from one malfunctioning machine to another in the predetermined order and along the shortest route.

3,824,559

DATA PROCESSING APPARATUS FOR WEIGHTING INPUT INFORMATION SIGNALS

David Latham Grundy, Saddleworth, England, assignor to Ferranti Limited, Hollinwood, Lancashire, England

Filed Aug. 17, 1972, Ser. No. 281,510

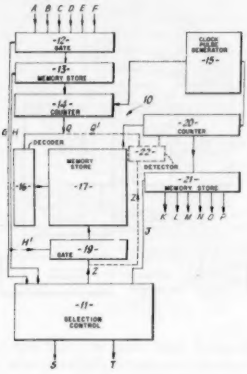
Claims priority, application Great Britain, Aug. 18, 1971, 38859/71

Int. Cl. G06f *15/34*

U.S. Cl. 340—172.5 **21 Claims**

A data processing apparatus is provided for weighting input information signals of varying magnitude each in accordance with a generated function representable by a stepped waveform and stored in a ROM. Each weighted instantaneous magnitude comprises an output of the apparatus.

The magnitude of the information is represented by a train of uniformly spaced pulses and the stepped waveform has unit changes in value at, at least, some of the unit time intervals



corresponding to the uniformly spaced pulses. A memory is addressed by the train of uniform pulses and output pulses are obtained for each such train corresponding a unit change in value of the stepped waveform of the generated.

3,824,560

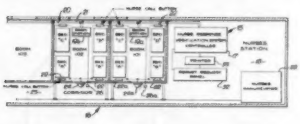
NURSE RESPONSE VERIFICATION SYSTEM

Richard D. Vitolo, 130 N. Brighton St., Burbank, Calif. 91506, and Philip Ingalls, Canoga Park, Calif., assignors to said Vitolo, by said Ingalls

Filed Oct. 2, 1972, Ser. No. 294,364

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **5 Claims**



A nurse response verification system particularly useful in hospitals or other health care facilities automatically records (a) the time that each patient calls for assistance, (b) how long the nurse takes to respond to the call, and (c) the length of time the nurse spends in service to the patient. The system comprises a plurality of remote stations each situated in a hospital room and connected to a controller which repetitively and sequentially interrogates all stations. Each time a nurse call is initiated, the station in the room where service was requested transmits an interrogation response word which causes the controller to establish in memory a record (a "call word") associated with that call. The "wait time" taken to respond to the call is tallied in the call word. When the nurse reaches the room, she presses a switch at the station, indicating that the call has been answered and identifying the bed of the patient requesting service. The station transmits this information to the controller for entry into the call word. The duration of service also is tallied in the call word. Upon completion of service, the nurse again presses a swtich at the room station. This causes the controller to complete the call word, which is stored along with other records for subsequent printout in report form, at operator request.

3,824,561

APPARATUS FOR ALLOCATING STORAGE ADDRESSES TO DATA ELEMENTS

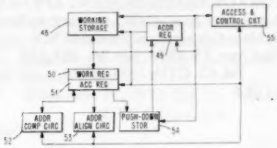
Peter Wolf, Boeblingen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,566

Claims priority, application Germany, Apr. 17, 1972, 2218839

Int. Cl. G11c *7/00*; **G06f** *13/00*

U.S. Cl. 340—172.5 **5 Claims**



A group of variable length data elements are allocated storage addresses by means of apparatus and an associated method, the allocation taking place before the data elements are stored. Characteristic data sets are provided in a main storage which define the characteristics of each data element in the group. The data sets are scanned in two directions. On the first pass, information as to the lengths and boundary requirements of each element are accumulated. On the second pass, addresses are allocated to each element to eliminate gaps in the group while maintaining proper boundary alignment.

3,824,562

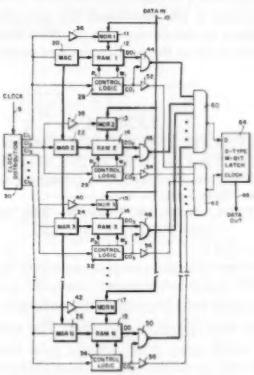
HIGH SPEED RANDOM ACCESS MEMORY SHIFT REGISTER

Lawrence M. Leibowitz, Fairfax, Va., and Charles F. Bates, Seat Pleasant, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,539

Int. Cl. G11c *19/00*

U.S. Cl. 340—172.5 **4 Claims**



A number of Random Access Memory (RAM) units are controlled by read-write logic, memory address counters, and a clock distribution function to provide a high speed shift register. The high speed capability is obtained through the use of

a plurality of lower speed RAMs by sequentially processing input data from the first RAM to the second, then the third, etc. The output is taken from each RAM and fed to a latch so that while one RAM is providing data as an output, a subsequent RAM is able to manipulate and operate on subsequent data. Extremely long, high speed shift registers may be realized by this invention with particular interest in the area of signal processing of radar video returns.

3,824,563

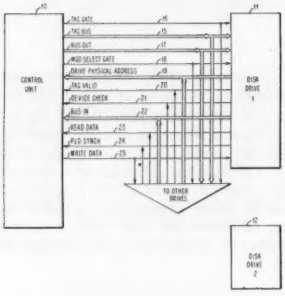
DATA STORAGE TRACK PADDING APPARATUS

Fernando A. Lutz, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,124

Int. Cl. G11b *5/00, 27/10*

U.S. Cl. 340—172.5 **13 Claims**



In data processing systems, several data storage files, such as disk files, are operated by a single, shared control unit for conducting normal read/write functions. Apparatus is located at and provided for each of the data storage files to assume control of the writing function from the control unit to pad a track with null characters from the end of the last record to a predetermined point on the track sensed by the file. The apparatus includes a local oscillator and apparatus for supplying the padding bits signals from the oscillator beginning with the termination of the control unit write gate signal for the track and continuing until a predetermined point of the track is detected. Apparatus is also provided for signaling the control unit that padding by the device is in progress and for signalling the control unit prior to the predetermined point.

3,824,564

INTEGRATED THRESHOLD MNOS MEMORY WITH DECODER AND OPERATING SEQUENCE

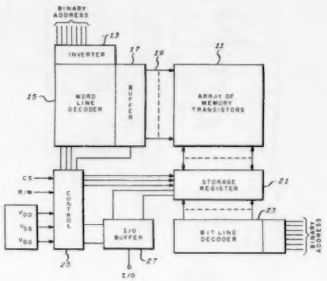
Horst A. R. Wegener, Carlisle, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed July 19, 1973, Ser. No. 380,782

Int. Cl. G11c *7/00, 11/40*

U.S. Cl. 340—173 R **9 Claims**

A digital memory system employing a rectangular array of known MNOS variable threshold insulated gate field effect transistor memory cells is actuated by auxiliary circuits which provide a four-step operating sequence. The memory cells are arranged in word rows in which the gate electrodes of all memory cells in a given row are connected together and in bit columns having common source and common drain connections. The auxiliary circuits provide intermediate gate voltages to a selected row of memory cells in the first step of the operating cycle so as to read the information stored in the memory cells into a register. In the second step of the operating sequence, a large negative gate voltage is applied to the selected row to circumvent the cumulative effect that might arise from a succession of positive WRITE pulses. In the third operating step, the memory cells in the selected row are set to



their least negative threshold value by an appropriate "clear" pulse, and in the fourth operating step information is written back into the selected memory cells from the register.

3,824,565

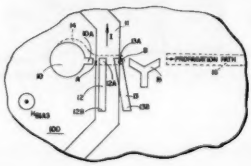
MULTIPLE BAR BUBBLE DOMAIN GENERATOR

John L. Archer, Orange; Leonard R. Tocci, Laguna Niguel, and Thomas T. Chen, Orange, all of Calif., assignors to North America Rockwell Corporation, El Segunda, Calif.

Filed Sept. 27, 1972, Ser. No. 292,712

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **10 Claims**



An improved generator device for use in producing magnetic bubble domains in a magnetic bubble domain apparatus.

3,824,566

MAGNETIC THIN FILM PLATED WIRE MEMORY

Seihin Kobayashi, and Michihiro Torii, both of Shizuoka, Japan, assignors to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 3, 1972, Ser. No. 294,595

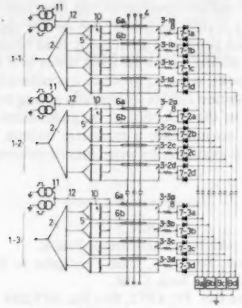
Claims priority, application Japan, Oct. 9, 1971, 46-79555

Int. Cl. G11c *11/14, 7/02*

U.S. Cl. 340—174 PW **6 Claims**

In a magnetic thin film plated wire memory has a plurality of digit pair wires intersecting substantially at right angles with word wires, and the digit wire pairs are grouped into a plurality of sense sections each of which include an equal number of digit pairs wire. Each sense section has one common sensing device and one digit driver. The digit wire pairs arranged on

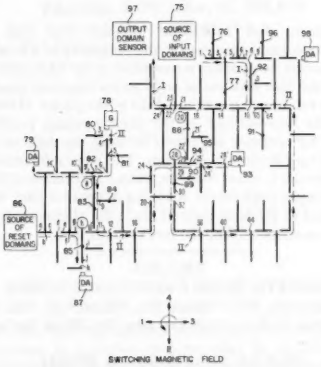
lines in each sense section are parallelly connected with the other digit wire pairs on the same lines in the other sense sections, the digit wire pairs on same lines in the different sense sections being also parallelly connected to one line selection switch.



3,824,567
MAGNETIC DOMAIN CODE REPEATER

Fred E. Sakalay, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 17, 1972, Ser. No. 307,760
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **9 Claims**

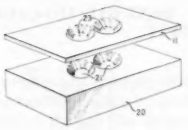


A magnetic domain (bubble) device which receives a coded train (1's and 0's) of input magnetic bubbles and continuously regenerates identically coded trains of output magnetic bubbles until reset. A first magnetic bubble propagation pathway of permalloy T and I bars is provided for directing the input coded bubbles through a bubble interaction region. A second propagation pathway is provided for directing a continuous series of locally generated magnetic bubbles through the same interaction region. The input bubbles propagate to an output terminal when interaction occurs. The locally generated bubbles are directed to a bubble annihilator in the absence of interaction and are diverted to an alternate propagation pathway merging with the first pathway in the presence of interaction. The input bubbles and the diverted locally generated bubbles are timed to reach the interaction region along the first propagation pathway simultaneously with the arrival of respective locally generated bubbles to the interaction region along the second propagation pathway. The bubble capacity of the alternate pathway is made equal to the number of the code positions in the input bubble train. Provision is made for selectively intercepting a number of locally generated magnetic bubbles equal to said number of code positions for terminating the regeneration of the input coded train.

3,824,568
SINGLE WALL DOMAIN PROPAGATION ARRANGEMENT

Robert Frederick Fischer, Livingston; Paul Herman Schmidt, Chatham, and Edward Guerrant Spencer, Murray Hill, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1972, Ser. No. 309,211
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **10 Claims**

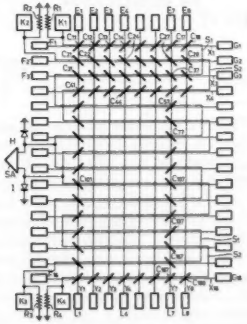


The deposition of an epitaxial layer, in which single wall domains can be moved, on a nonplanar surface of a suitable substrate results in a nonplanar layer in which the domains can be moved in response to a rotating magnetic field in the absence of structured magnetically soft elements. An alternative to the familiar T- and bar-permalloy elements in "field access" single wall domain devices results.

3,824,569
MATRIX STORE INCORPORATING NOISE-BALANCING

Cornelis Christianus Maria Schuur, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 1, 1972, Ser. No. 311,445
Claims priority, application Netherlands, Dec. 3, 1971, 7116619
Int. Cl. G11c *7/02*
U.S. Cl. 340—174 DC **6 Claims**



The signal amplifier in this three-wire matrix store is connected to the centres of two sense wires. During reading the noise caused by the X-selection current is balanced by a

second X-selection current, so that both sense wires pick up the same noise. As a result of a correct orientation of the second core which is selected by coincident currents, the latter core does not switch. The noise caused by the Y-selection current is balanced by a similar, opposed noise on the other half of the same sense wire. During a write operation the core is again selected by coincident currents, an inhibit current on the half of a sense wire then causing a "zero" to be written. The cores are threaded according to a double fishbone pattern.

3,824,570

MAGNETO-OPTICAL TRANSDUCER USING BUBBLE DOMAINS

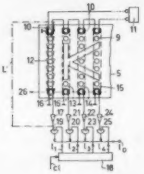
Laurentius Antonius Peter Maria De Bot, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,229

Claims priority, application Netherlands, Mar. 17, 1972, 7203555

Int. Cl. G11c *11/14, 11/42*

U.S. Cl. 340—174 YC **5 Claims**



A device for converting image information into magnetic information including a light source for projecting an image of the image information onto a plate of magnetic material capable of accommodating domains. A domain pattern is produced by the projection of the image information, as a result of the thermal action of the incident light, which is an image of the image information. Domain displacement means are provided by means of which the domain pattern thus obtained can be displaced, at least in parts, for reading purposes.

3,824,571

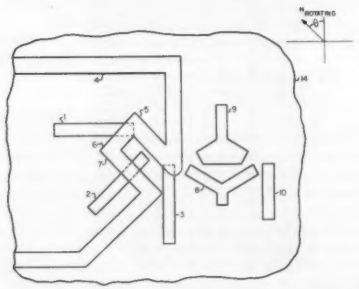
MAGNETIC BUBBLE GENERATION

Richmond B. Clover, Jr., Sunnyvale, and Robert F. Waites, Palo Alto, both of Calif., assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Apr. 9, 1973, Ser. No. 349,163

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **7 Claims**



A magnetic bubble generator device is provided for nucleating magnetic bubbles in a wafer of magnetic material. The device includes an arrangement of permalloy elements which generate fringing magnetic fields near their ends when the elements are magnetized by an applied rotating magnetic field. These fringing fields penetrate the magnetic wafer, but are not large enough to induce reversal of the direction of the magnetization in the wafer. However, the device also includes a current line which generates a magnetic field when it is pulsed, this latter field adding to the fringing fields in a localized region of the magnetic wafer to produce a combined field in that region. The combined field is sufficiently strong to induce a localized reversal of the direction of magnetization in the magnetic wafer; i.e. to nucleate a magnetic bubble. The device may be used, for example, to write bits of information into a bubble memory.

3,824,572

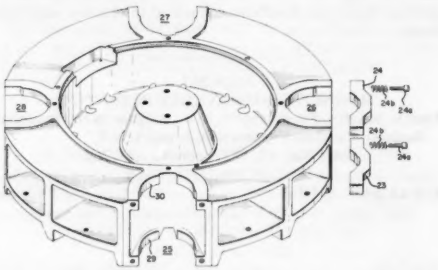
ALIGNABLE DISK PACK

James Morehouse, San Jose, Calif., assignor to Disk Systems Corporation, Santa Clara, Calif.

Filed Oct. 19, 1973, Ser. No. 407,885

Int. Cl. G11b *5/56*

U.S. Cl. 340—174.1 C **4 Claims**



A magnetic disk subsystem includes four disk packs alignably mounted in recesses in the periphery of a base plate. A rotary access mechanism is mounted on the base plate in the center of the four disk packs and carries magnetic heads into read/write relationship with the disks of the packs. Mating surfaces in the recesses and on the pack housings provide the capability for accurate alignment between the disks of a pack and the rotary access mechanism. The center of rotation of the disk spindle is offset from the center of rotation of the disk pack housing in each recess. Rotation of the disk pack housing with respect to the base plate changes the alignment between the access mechanism and the tracks of the disk.

3,824,573

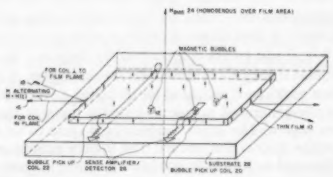
MAGNETIC BUBBLE RESONANCE SENSOR

John F. Scarzello, 6917 Allview Dr., Ellicott City, Md. 21046, and Robert S. Sery, 1105 Oakview Dr., Silver Spring, Md. 20903

Filed July 19, 1973, Ser. No. 380,642

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 RF **7 Claims**

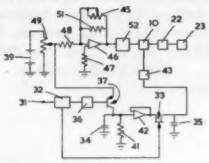


A magnetic sensor to sense the presence or absence of a bubble domain at selected locations in a magnetic bubble memory or logic element, employing magnetic resonance phenomena to sense the bubble domain.

3,824,574
PROCESS CONTROL APPARATUS

John Michael Ironside, Birmingham; Duncan Barry Hodgson, Leamington; Michael Herbert Cops, and Malcolm Williams, both of Solihull, all of England, assignors to Joseph Lucas (Electrical) Limited, Birmingham, England

Filed Dec. 21, 1972, Ser. No. 317,433
Claims priority, application Great Britain, Dec. 21, 1971, 59507/71
Int. Cl. H04q 9/06
U.S. Cl. 340—213 Q 2 Claims

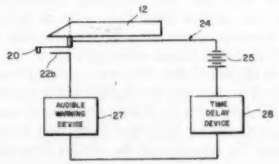


This invention relates to process control apparatus in which two parameters of a process are measured, and fed to a memory unit which produces an output pulse of length dependent on the values of the two parameters, the output pulse being used to control the process. One of the inputs to the memory unit is varied in a non-linear manner so that the accuracy with which the memory unit defines the pulse length is increased.

3,824,575
WARNING DEVICE FOR USE WITH BOATS

William Rich, III, 454 Fort Washington Ave., New York, N.Y. 10033

Filed Mar. 5, 1973, Ser. No. 338,173
Int. Cl. G08b 21/00
U.S. Cl. 340—241 6 Claims

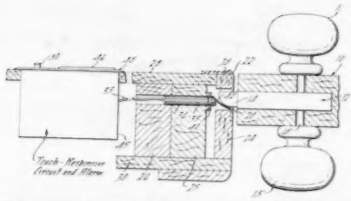


A portable warning device is mounted on the deck of a boat at anchorage in a harbor and provides an audible warning signal in response to changes in the wind direction relative to the boat. The warning device comprises a pivotable wind vane for sensing the wind direction and a movable electric contact is connected to the wind vane to undergo pivotal movement therewith. A pair of annular electric contact segments are disposed stationary relative to the boat and positioned in spaced-apart relationship along the path of travel of the movable contact to alternatively engage with the movable contact whenever the sensed wind direction relative to the boat exceeds a certain value. A normally open electric circuit is electrically connected to the movable contact and the contact segments such that movement of the movable contact into engagement with either one of the electric contact segments closes the electric circuit. The electric circuit includes a warning device operative when actuated to emit the audible warning signal, and a time delay device for delaying the actuation of the warning device for a predetermined time period after the electric circuit is closed.

3,824,576
ALARM SYSTEM ACTIVATED BY TOUCH SENSITIVE DOOR KNOB INTRUSION

Robert J. Pioch, 3982 Utopia Dr., Clark Lake, Mich. 49234

Filed Aug. 16, 1972, Ser. No. 281,132
Int. Cl. G08b 13/00; H01h 35/00
U.S. Cl. 340—258 C 1 Claim

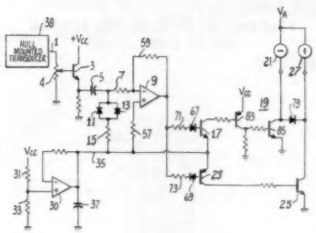


An alarm system consists of a touch-sensitive electronic circuit connected to the handle of a door by an electrical connection which is completed through the striker plate area and latch bolt.

3,824,577
ACCELERATION AND DECELERATION SENSING AND INDICATING SYSTEM FOR BOATS AND THE LIKE VESSELS

Arthur C. Stickney, Scarborough, Maine, assignor to The Eastern Company, Naugatuck, Conn.

Filed Oct. 10, 1972, Ser. No. 296,071
Int. Cl. G01p 15/00; G08b 21/00
U.S. Cl. 340—262 7 Claims

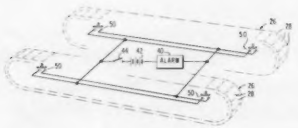


An acceleration and deceleration sensing and indicating system is provided to indicate changes in speed of a boat and the like vessel. Acceleration and deceleration of the boat are sensed and monitored by a hull-mounted electrical transducer and associated electronic processing circuitry. Electronic circuitry processes the signal generated by the transducer and operates the respective indicator light and/or lights to display a position (+) indication for acceleration and a negative (−) indication for deceleration. Means are also provided in the electronic circuitry to insure that sudden large changes in speed will not cause the indicator light and/or lights to be energized for undesirably long periods of time and therefore mask subsequent small changes in speed. Thus, in one particular application of this system, a sailboat helmsman is able to evaluate the effect of small changes in the trim of the ship's gear.

3,824,578
ATTITUDE INDICATOR FOR LOAD LIFTING APPARATUS AND METHOD

Holton G. Harders, 5521 E. Highway 98, Panama City, Fla. 32401

Filed May 22, 1972, Ser. No. 255,707
Int. Cl. G08b 21/00
U.S. Cl. 340—267 C 24 Claims

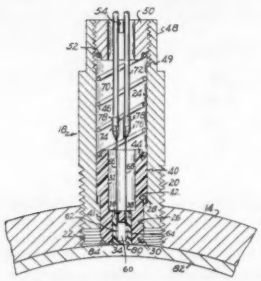


In a load lifting apparatus such as a crane mounted on a support frame, a method and system for actuating an alarm when the support frame is vertically displaced a predetermined amount through inclination of the support frame to indicate an unsafe inclined attitude of the apparatus support frame. In one embodiment wherein the crane is supported on a tractor, four switches are respectively mounted at spaced locations on the tractor frame to be actuated by associated control arms mounted for vertical movement relative to the tractor frame when the latter has undergone a predetermined unsafe amount of inclination. Any one of the switches upon closing will close a battery operated electrical circuit containing the alarm to sound the alarm. In another embodiment, the arm and switch assemblies are applied to an "outrigger" jack system used to support the crane above the ground surface.

3,824,579
APPARATUS FOR MONITORING BEARING TEMPERATURE AND FOR PROTECTING BEARING FROM OVERTEMPERATURE

Joseph W. Waseleski, Jr., Mansfield, Mass., and Ralph E. Charnley, Esmond, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 26, 1972, Ser. No. 318,044
Int. Cl. G08b 21/00
U.S. Cl. 340—269 15 Claims

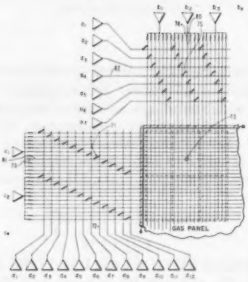


A system for monitoring and protecting a bearing employs a temperature responsive thermistor spring biased against the outer shell of the bearing. The thermistor preferably has a positive temperature coefficient of resistivity with a threshold or anomaly temperature for example of approximately 300°F above which the thermistor changes from a low resistance to a high resistance mode. The change in resistance is sensed by a protection circuit and a switch is actuated upon overheating of the bearing. The thermistor is disposed in a probe which is slidably mounted in a sensor head. A spring located in the head biases the probe outwardly, the outward motion being limited by stop surfaces. The sensor head is mounted in a housing containing the bearing such that in the absence of the bearing the probe would extend into the bearing cavity. Insertion of the bearing cams the probe toward the sensor head leaving the probe in close thermal contact with the bearing structure.

3,824,580
GAS PANEL MATRIX DRIVER

Charles Ronald Bringol, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,355
Int. Cl. H01j 11/00
U.S. Cl. 340—324 M 9 Claims



A method and system for driving a gas panel, which employs a resistor matrix, between the panel drivers and the panel. The resistor matrix is operated in approximately a half-select mode in a manner such that two horizontal control lines must be driven and two vertical drive lines must be driven to write a cell. The algebraic summation of the potential on the drive lines from the matrix causes selected cells to fire or emit light pulses, or in the event that they have already been fired, continue to fire. Through use of the matrix, the number of drivers required is greatly reduced in that no longer is there a requirement of one driver for each horizontal and vertical line, and thus the logic for selection of the drivers is greatly simplified. In addition, since the matrix is operated in a half-select mode, single horizontal and vertical drivers can be utilized to erase an entire character position without need, as is in the conventional case, of a cell-by-cell erasure under control of the logical character generator.

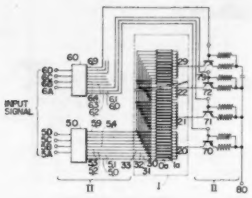
3,824,581
SIGNAL MAGNITUDE DISPLAY DEVICE FOR CONVERTING AN INPUT ELECTRIC SIGNAL INTO A VISUAL DISPLAY

Isamu Ohno, Tokyo, Japan, assignor to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed June 12, 1972, Ser. No. 261,592
Claims priority, application Japan, June 26, 1971, 46-55780
Int. Cl. G08b 5/36
U.S. Cl. 340—324 R 5 Claims

An electrically operated, signal magnitude display device of a non-mechanical, compact type suitable to substitute for a panel meter, with the capability of converting an input digital electrical signal into a visual analog display wherein the magnitude of the input signal is to be represented by an appropriate indication of position within the field of the display. The device comprises a display section having a plurality of

electrically activatable luminous elements, such as luminous diodes, arranged in a one-dimensional array so that the elements may be independently activated to luminesce and thereby serve to visually define an incrementally variable position within the array. An electrical circuit, interconnecting with the luminescent element terminals through respective intersecting common groups of terminals in a matrix circuit,



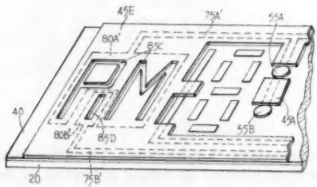
responds to the input signal and selects the specific luminous element positioned in the array to correspond to the magnitude of the input signal. In a practical example, the electrical circuit receives, e.g., two digits of a binary coded decimal input signal and converts them to two decimal signals gating two intersecting groups of ten terminals in the matrix circuit to form an activation circuit through the one luminescent element whose terminals appear in the two groups.

3,824,582

GAS PANEL DISPLAY APPARATUS

David Glaser, Green Brook, and Joel M. Levine, Flemington, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 24, 1971, Ser. No. 201,679
Int. Cl. G09f *9/32*
U.S. Cl. 340—336 **3 Claims**



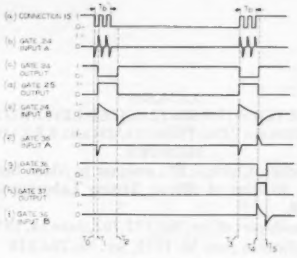
A special format readout indicator of the gas discharge type includes several different character and symbol display positions in a flat sandwich structure. The device includes an insulating base plate on which a plurality of separate groups of cathode electrode segments and terminals for them are formed. Some of the cathode groups are interconnected arrays of electrode segments provided for displaying different characters or symbols, while others are preformed for displaying only predetermined symbols, and are interconnected if operation permits. Some of the anodes are associated both with a character display cathode group and with one or more of the symbol indicating cathode elements. The cathodes are formed of strips or bars of conductive material connected to conductors supported on the insulating base plate. The anode electrodes are suitably shaped to cooperate with appropriate ones of the character and symbol cathodes and are supported near them, preferably being carried by an insulating face plate.

3,824,583

APPARATUS FOR DIGITIZING NOISY TIME DURATION SIGNALS

Quentin C. Turtle, Cranston, R.I., assignor to General Signal Corporation, Rochester, N.Y.

Filed Nov. 5, 1971, Ser. No. 196,033
Int. Cl. H03k *13/00*
U.S. Cl. 340—347 R **3 Claims**



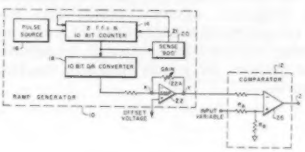
The disclosure relates to apparatus for transducing time duration signals into digital form and concerns a scheme for preventing contact bounce noise in said signals from triggering the production of the control pulses needed for the transducing process. The scheme includes a one-shot multivibrator which produces an output pulse of longer duration than the bounce period whenever the signal reverts to its reference level, and apparatus which senses both said output pulse and the time duration signal and produces a control pulse only when the trailing edge of said output pulse occurs at a time when the signal is at its reference level.

3,824,584

ANALOG-DIGITAL CONVERTER CIRCUIT

Pasco A. Coia, Providence, R.I., assignor to General Signal Corporation, Rochester, N.Y.

Filed May 15, 1972, Ser. No. 253,549
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **9 Claims**



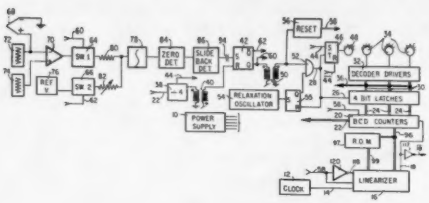
An analog-digital converter circuit that converts electrical input signals, representative of such variables as voltage, current or resistance, into time-impulse signals. The converter circuit as disclosed is designed to accept various input signals for example, signals representing values between 0–5 volts, 4–20 milliamps, 10–50 milliamps, 0–25 kilohms. Signals of this character are converted into time-impulse signals whose pulse width is adjusted to be directly proportional with the magnitude of the input signals. When the aforementioned analog input electrical signals are so converted they are then adapted to be transmitted great distances via telephone lines, or radio-microwave communication links, without distortion. Such form of output signals are adapted for transmission in connection with certain time-impulse telemetering systems, for example, a system known as the Chronoflo system. When used with such Chronoflo system, a 0–5 volt signal would be

adjusted to give a 0–13.333 second pulse, whose repetition cycle would be 15 seconds. The converter of the instant invention includes provision for accepting various input signal levels and for modifying the output time-impulse signal to conform to a variety of time-impulse formats. Another provision which is included is a masking of the input signals which occur below a prescribed level. This masking of input signals below a threshold prevents spurious signal generation due to low level noise at the input.

3,824,585
PYROMETER WITH DIGITALIZED LINEARIZING CORRECTION HAVING PROGRAMMABLE READ ONLY MEMORY

Robert S. Meijer, Chicago, Ill., assignor to Alnor Instrument Company, Division of Illinois Testing Laboratories, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 152,702, June 14, 1971. This application June 20, 1972, Ser. No. 264,616
Int. Cl. H03k *21/34*
U.S. Cl. 340—347 NT **16 Claims**



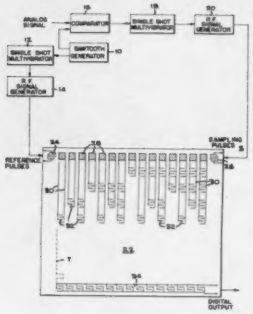
By feeding BCD temperature representing count pulses into a read only memory (R.O.M.) which feeds into simple gating logic, progressively selected count pulses are discarded to cause a nonlinear thermocouple response to become linearized. The thermocouple response is fed into an improved dual slope integrator; whereby, pulse width modulation becomes a related measurement of sensed temperature. The R.O.M. enables the linearized output to be subdivided into many linear sections for greatly improved tracking of the linearized curve.

3,824,586
METHOD OF AND APPARATUS FOR ANALOG TO DIGITAL CONVERSION UTILIZING ACOUSTIC WAVES

Calvin F. Quate, Los Altos Hills, Calif., assignor to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Sept. 7, 1972, Ser. No. 286,928
Int. Cl. H03d *13/00*; **H03k** *13/02*
U.S. Cl. 340—347 AD **3 Claims**

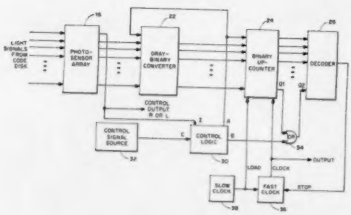
An analog to digital conversion system wherein a sequence of correlated electromagnetic reference pulses and sampling pulses are generated, the individual sampling pulses each being time-delayed an amount determined by the instantaneous value of an analog signal. The reference and time-delayed sampling pulses are then applied to a piezoelectric medium to generate acoustic waves in a fashion such that translation of the two waves occurs and interaction exists at a position determined by the time delay of each sampling pulse. One of a group of acoustic digital pulse trains is then generated uniquely corresponding to the interaction position and is then extracted from the piezoelectric medium as the electromagnetic digital output.



3,824,587
DUAL MODE ANGLE ENCODER

John T. Fowler, Winthrop, Mass., assignor to The Laitram Corporation, New Orleans, La.

Filed Oct. 25, 1972, Ser. No. 300,771
Int. Cl. G08c *9/08*
U.S. Cl. 340—347 P **4 Claims**



An angle encoder for selectively providing from a single rotatable code element an output indication of the angular position of the rotatable element and of angular deviation and sense with respect to a reference position. A Gray coded code element is employed and from which a Gray code is sensed to provide digital signals which are processed by associated logic circuitry operative in two modes. In one mode an output indication is provided of the angular position of the code element, while in a second mode an output indication is provided of the extent and sense of angular deviation of the code element.

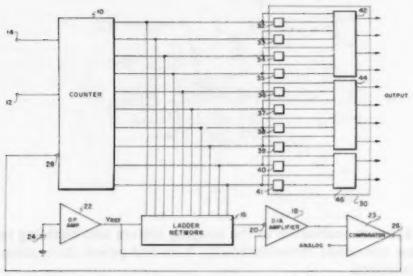
3,824,588
ANALOG TO DIGITAL CONVERTER HAVING DIGITAL OFFSET CORRECTION

Ronald G. Vermillion, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1973, Ser. No. 330,924
Int. Cl. H03k *13/02*, *13/32*
U.S. Cl. 340—347 CC **2 Claims**

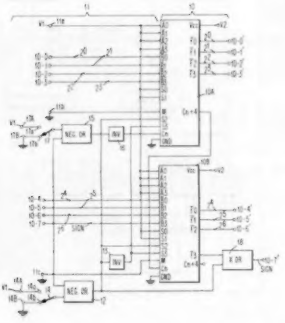
An analog to digital converter digitizes incoming analog signals and also corrects the digitized value for zero baseline

offset. The converter is a ripple counter using an inverted resistor ladder network. The output of the ladder network is compared with the incoming analog signal for equality. When equality is sensed the counter is stopped. Offset correction is



performed by digitizing a zero level analog signal, determining the error, and storing the error in a register. The stored value of the error is added or subtracted arithmetically to subsequent conversions.

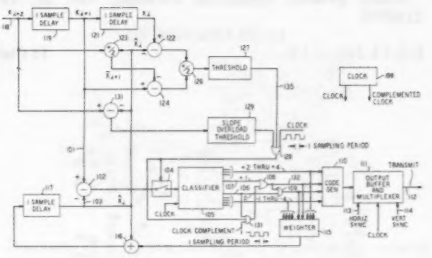
3,824,589
COMPLEMENTARY OFFSET BINARY CONVERTER
James G. King, Owego, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1972, Ser. No. 317,990
Int. Cl. G06f *3/00*
U.S. Cl. 340—347 DD **3 Claims**



A converter and control means therefor for converting sign magnitude, one's complement and two's complement binary input signals to complementary offset binary output signals.

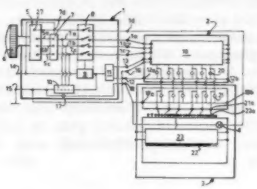
3,824,590
ADAPTIVE INTERPOLATING VIDEO ENCODER
John Ormond Limb, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Mar. 26, 1973, Ser. No. 345,001
Int. Cl. H04b *1/00;* **H03k** *13/22*
U.S. Cl. 340—347 AD **8 Claims**

Input samples are subjected to two separate single sample delays such that three consecutive samples are simultaneously available. A first sample is encoded differentially to full precision, and the encoded version is interpolated with the actual value of the third sample to yield an estimate of the second sample. The error between a reconstruction of the first sample and its original value is averaged with the error between the interpolated estimate for the second sample and its original



value. This averaged error, which simulates visual integration, is compared with a threshold. If the threshold is exceeded, the second sample is encoded to full precision; otherwise, a predetermined code word is transmitted such that the receiver decodes by means of interpolation. Thereupon, the third sample is encoded to full precision and the process continues. Slope overload correction is also provided.

3,824,591
ILLUMINATED MAP
Philippe Simon, 9 avenue Gaston Boissier, 78-Viroflay, France
Filed Mar. 2, 1973, Ser. No. 337,372
Int. Cl. G08b *5/00*
U.S. Cl. 340—381 R **33 Claims**



Information display device comprising in combination an illuminated diagram, an indicating table carrying a list of locations on said diagram, and electronic selector means. The selector means comprises a generator assembly adapted to deliver a succession of pulses over at least three output lines and to supply said lines successively, but with over-lapping periods in which two lines are simultaneously supplied. The indicating table is provided with a plurality of illuminable indicators each associated with a location listed thereon and connected to said generator assembly to be successively illuminated by the pulses therefrom. The diagram carries a plurality of illuminable indicators, each associated with a position on said diagram listed on said indicating table and connected to be lit whenever the corresponding indicator on said indicating board is lit and said pulse generator stopped.

3,824,592

METHOD AND APPARATUS FOR MEASURING AND INDICATING THE DISTANCE, DISTANCE VARIATION, OR BOTH BETWEEN AN AUTOMOTIVE VEHICLE AND AN OBSTACLE

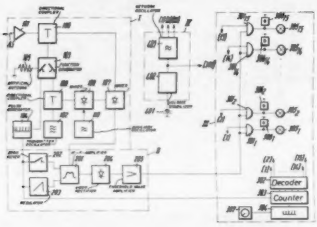
Ludwig Mehltretter, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft Mit Beschrankter Haftung, Munchen, Germany

Filed Oct. 10, 1972, Ser. No. 296,043

Claims priority, application Germany, Nov. 26, 1971, 2158793

Int. Cl. G01s 9/06, 9/24

U.S. Cl. 343—13 R 12 Claims



A modulated interrogation signal is transmitted from the vehicle, received at the vehicle after reflection from an obstacle, and compared with a reference signal for determination of the distance, distance variation or both. The transmission of the interrogation signal is stochastically controlled, and the received signals are utilized, to indicate the desired distance information, only after repeated comparison correlation thereof with the reference signal. The apparatus includes a transmitter controlled by a function generator to emit a modulated interrogation signal, a receiver for the reflected interrogation signal, an evaluating circuit for comparing the reflected signal with the reference signal, and an indicating instrument influenced by the evaluation circuit. The generator stochastically controls either the frequency or the amplitude of the function generator within certain limits, and a plurality of distance gates in the evaluation circuit, corresponding to respective successive distance ranges, have the reference signal applied to a first input and the received signals applied to a second input. Each gate has a correlator connected to its output and which is operable, only after repeated gating through of the associated distance gate, to deliver a signal to the indicating instrument connected with the respective distance gate.

3,824,593

MILLIMETER WAVE IMAGING SYSTEM USING DIRECT CARRIER INJECTION

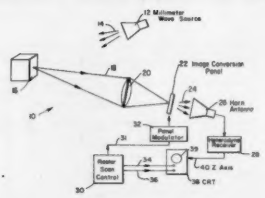
Joseph M. Baird, Newberry Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 4, 1972, Ser. No. 312,005

Int. Cl. G01s 7/04

U.S. Cl. 343—17 18 Claims

Disclosed is a millimeter wave imaging system which includes means for illuminating a remote target with RF energy and means for receiving and processing the RF energy which is reflected from the target. The processing means includes a diode array upon which the received energy is focussed and which is directly driven by an X-Y addressing system. The diodes in the array are digitally scanned directly to thereby directly inject carriers sequentially into the diodes in the panel. These diodes alternately pass and absorb the incoming RF energy at high image conversion rates, thereby imparting



maximum resolution to the imaging system and enabling real time operation. Simultaneously, heat and power dissipation is minimized.

3,824,594

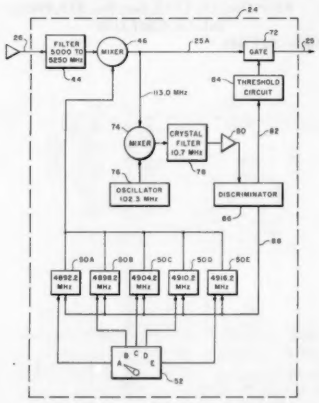
APPARATUS FOR RECEIVING SEPARATE STANDARD FREQUENCIES WITH SEPARATE SUB-BANDS

Warren Hundley, Upper Saddle River, N.J., assignor to Tull Aviation Corporation, Armonk, N.Y.

Filed Oct. 20, 1972, Ser. No. 299,468

Int. Cl. G01s 1/18

U.S. Cl. 343—108 R 10 Claims



Radio guidance signals are received in any one of a plurality of frequency sub-bands with a separate standard frequency signal being provided for each separate frequency sub-band, and each standard frequency signal being spaced apart from the associated guidance signal sub-band by the same fixed frequency difference.

3,824,595

HIGH ACCURACY DIRECTION FINDING SYSTEM

Stanley Rylon Hall, Ellicott City, Md., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

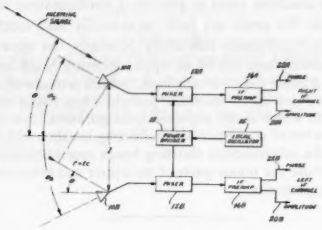
Filed June 4, 1971, Ser. No. 149,949

Int. Cl. G01s 3/48

U.S. Cl. 343—113 R 33 Claims

A method and apparatus for performing high accuracy direction finding. The amplitude difference and phase dif-

ference of a signal as received at a single pair of squinted antennas are determined. A fine but ambiguous indication of the direction is generated from the determined phase difference



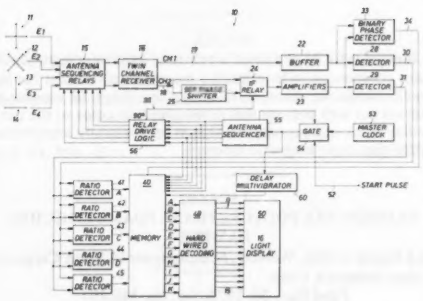
and a rough but unambiguous indication of direction is generated from the determined amplitude difference. The rough unambiguous indication is then utilized to resolve the ambiguity of the fine indication.

3,824,596

AUTOMATIC SECTOR INDICATING DIRECTION FINDER SYSTEM

William G. Guion, and Terence C. Green, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Sept. 27, 1972, Ser. No. 292,533
Int. Cl. G01s *5/02*
U.S. Cl. 343—113 R **20 Claims**



An automatic sector indicating direction finder system which incorporates a receiving antenna arrangement incorporating four separate antenna patterns, each having a field pattern which is a function of the azimuth angle, the apparatus forming antenna signals which are then transferred through a plurality of antenna sequencing relays to a dual channel receiver. The dual channel receiver is connected to the four antennae in a timed sequence. The two outputs of the dual channel receiver are applied to phase detectors and amplitude detectors which determine the relative amplitude ratios. These ratios and the phase measurements are stored in memory momentarily and are then strobed from memory through a hard wired decoding logic circuit to an external display. The display breaks the 360° of azimuth into sixteen sectors, all equal in size, and indicates the sector location of a target.

3,824,597

DATA TRANSMISSION NETWORK

Edward A. Berg, Vienna, Va., assignor to Data Transmission Company, Vienna, Va.

Filed Nov. 9, 1970, Ser. No. 88,068
Int. Cl. H04j *3/00*
U.S. Cl. 343—204 **22 Claims**

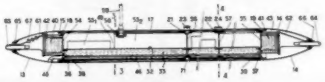
Disclosed is a transcontinental communications network particularly designed for the very rapid transmission of digital data between subscribers throughout major areas of the United States. The network comprises a microwave trunkline extending from San Francisco downwardly through the center of the country and upwardly to Boston along which data may be transmitted at rates of 4800, 9600, and 14,400 bits per second and higher. Transmission along the trunkline is by phase modulation of a carrier in the 6 MHz and 11 MHz band. Time division multiplexing provides a minimum of 4,000 channels utilizing a relatively small bandwidth of the frequency spectrum. The trunklines are under the control of switching centers comprising regional and district offices which allocate channels and handle communications traffic through the network. A microwave cable or optical local distribution system connected to the basic trunkline provides a full duplex operation throughout the network and insures the rapid transmission of data completely throughout the network from one subscriber to another.

3,824,598

APPARATUS FOR MAINTAINING ELECTRONIC EQUIPMENT IN AN AIRPLANE BELOW A CERTAIN TEMPERATURE

Guy Beaussay, La Celle; Jean Francois Morand, Paris, and Pierre Rossignol, Colombes, all of France, assignors to Electronique Marcel Dessault, Paris, France

Filed Sept. 22, 1972, Ser. No. 291,369
Claims priority, application France, Sept. 28, 1971, 71.34837
Int. Cl. H01q *1/28*
U.S. Cl. 343—705 **1 Claim**



An apparatus for maintaining electronic equipment in an airplane below a certain temperature. The apparatus comprises an elongate cylindrical container with pointed end sections removably mounted on the container. A tank is located along the length of the container and contains a liquid with a high heat capacity. A beam having a U-section houses the electronic equipment. In the course of the flight, the heat generated by the electronic components and by the friction of the outside wall of the container against the air is absorbed by the liquid. The tank is provided with heat exchange tubes

which can be connected to a cold fluid source when the plane is on the ground in order to bring the temperature of the liquid to ambient temperature or below. Expansion chambers are provided at the ends of the tank enabling the expansion of the liquid during flight.

3,824,599

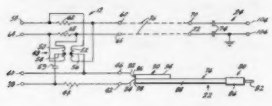
TV/FM/AM ANTENNA COUPLER

Charles K. Haswell, Scotts, Mich., assignor to Barker Manufacturing Company, Inc., Battle Creek, Mich.

Filed Dec. 13, 1972, Ser. No. 314,709

Int. Cl. H01q *9/16*

U.S. Cl. 343—822 **4 Claims**



An antenna system using a standard dipole antenna capable of receiving television, AM and FM signals employing signal isolation means wherein the antenna may be automatically used to receive AM, FM and television signals without adjustment or control. A coaxial cable is employed from the antenna coupler to the AM/FM radio receiver, and a coaxial cable stub is disposed adjacent the radio antenna lead-in and is of a length equal to substantially 1/4 of a wavelength in the FM band, the shields of the antenna lead-in and the coaxial stub being electrically connected, and the inner conductors being connected to the dipole antenna such that the stub coaxial cable functions as a "short circuit" providing correct coupling to the dipole antenna when receiving FM signals, but does not interfere with AM signal reception.

3,824,600

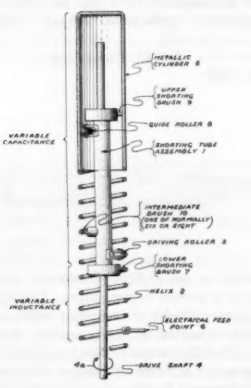
TUNING MECHANISM FOR A HELIX/CYLINDER ANTENNA

Charles P. Majkrzak, Nutley, and Michael S. Polgar, Oceanport, both of N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 5, 1973, Ser. No. 329,792

Int. Cl. H01q *1/36*

U.S. Cl. 343—895 **21 Claims**



There is disclosed a tuning element configuration for a helix/cylinder (inductance/capacitance) type antenna, the tuning element comprising a shorting tube assembly which includes a lower tube drive assembly, an upper guide roller assembly and an intermediate shorting brush assembly arranged therebetween. The tube drive assembly consists of a lower shorting brush arrangement and a drive roller arrangement, the latter of which is made up particularly of a simple stamped and screw-machine parts to provide a configuration which is superior to the prior art both structurally and electrically while being significantly less costly. Similarly, the upper guide roller assembly consists of an upper shorting brush arrangement and a guide roller arrangement which is made up of simple stamped and screw-machine parts in a less costly but electrically and structurally superior configuration. Provision is made for a novel construction of shorting brushes which go to make up the intermediate shorting brush assembly and which also constitute the major parts of the upper and lower shorting brush arrangements.

3,824,601

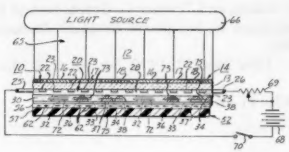
MULTI-COLOR MAGNETIC IMAGE RECORDING AND MEDIA

Thomas H. Garland, El Monte; Sherman W. Duck, Altadena; Frederick J. Jeffers, Altadena, and Richard J. McClure, Altadena, all of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Mar. 28, 1972, Ser. No. 238,899

Int. Cl. G01d *15/12, 15/34*

U.S. Cl. 346—74.1 **31 Claims**



A color print of an image is provided by producing of each color component to be printed a magnetic record that has its specific magnetic moment. Each of these magnetic records is printed out with a toner that corresponds in color to the particular color component and that is magnetically attractable by the particular magnetic moment.

3,824,602

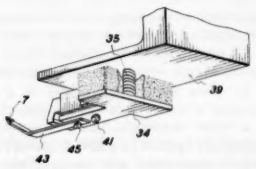
CLOSED CELL POLYURETHANE FOAM PEN GUIDE DAMPER

Ved Kumar Gulati, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 30, 1973, Ser. No. 346,497

Int. Cl. G01d *15/00*

U.S. Cl. 346—139 C **1 Claim**



A writing stylus assembly for recording incoming facsimile signals on a writing medium such as an electroresistive paper held around a drum of a facsimile transceiver, comprises a spring means for pressing the stylus tip so that the tip rides on

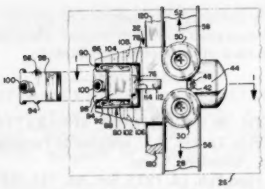
the surface of the writing medium with a predetermined amount of pressure, a lever which moves, upon actuation, the tip of the writing stylus away from the drum and the writing medium, and means responsive to the deactuation of the lever for retarding the relaxation time of the spring to prevent the stylus tip from hitting against the drum.

3,824,603

SOLENOID ACTUATED RECORDING APPARATUS

Roy G. Bates, and William R. Dahl, both of Littleton, Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 18, 1972, Ser. No. 316,341
Int. Cl. G01d *15/24*
U.S. Cl. 346—141 **2 Claims**



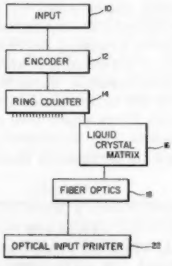
An X-Y recorder carrier supports a stylus and solenoid which are uniquely linked to provide movement of a stylus on to a chart thereby to avoid inertial effects of the solenoid on the stylus in the selective actuation by the solenoid of the stylus into and out of chart engagement. Electrical power for the solenoid is transmitted to the solenoid by the carrier drive cables and associated pulleys.

3,824,604

ALPHANUMERIC PRINTING SYSTEM EMPLOYING LIQUID CRYSTAL MATRIX

Edward I. Stein, 8521 N. Lotus Ave., Skokie, Ill. 60076

Filed Oct. 12, 1972, Ser. No. 297,011
Int. Cl. B41b *13/00, 15/00, 17/00*
U.S. Cl. 354—5 **15 Claims**



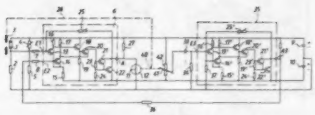
A completely solid state printing system having a keyboard or computer input, a bit encoder or data translator, a matrix switching system, a liquid crystal matrix to optically form the characters to be printed, a fiber optics translator, and a xerographic printing machine to reproduce the character impressions received from the fiber optics translator.

3,824,605

ILLUMINATION CONTROL ARRANGEMENT FOR PHOTOGRAPHIC CAMERA

Engelbert Fliesser; Karel Pustka, and Eduard Wagensonner, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 176,757, Oct. 6, 1971. This application Nov. 13, 1973, Ser. No. 415,387
Claims priority, application Germany, Oct. 6, 1970, 2049110
Int. Cl. G03b *7/10*
U.S. Cl. 354—42 **9 Claims**



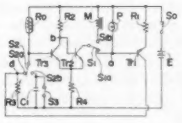
An arrangement in photographic cameras in which the diaphragm is positioned through an electromagnetically operated setting device with damped motion. A first voltage divider has a light-sensitive element and is connected to one terminal of a difference amplifier. A second voltag divider is connected to the second terminal of the difference amplifier and serves as a source of reference voltage against which the voltage signals from the first voltage divider containing the light-sensitive element is compared. The output of the difference amplifier is connected to the diaphragm-setting device which, in turn, positions a voltage generator that provides a voltage signal dependent upon the velocity of the diaphragm-setting device. This velocity-dependent voltage signal is applied to the second voltage divider so as to result in damped motion of the setting device.

3,824,606

PHOTOGRAPHIC EXPOSURE CONDITION INDICATING DEVICE

Ichiro Yoshiyama, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-ku, Japan

Filed Mar. 2, 1973, Ser. No. 337,480
Claims priority, application Japan, Mar. 17, 1972, 47-27911; Mar. 24, 1972, 47-30128
Int. Cl. G03b *7/08, 17/18*
U.S. Cl. 95—10 CE **6 Claims**

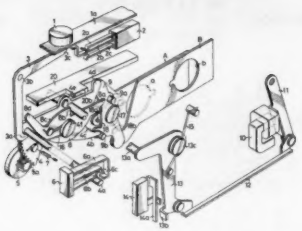


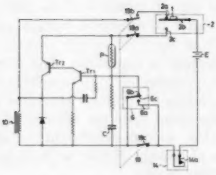
In a photographic camera having a shutter the speed of which is automatically controlled, the photographic exposure condition indicating device comprising a light sensitive element, a switching circuit responsive to an output signal from the light sensitive element and an indicating circuit including an electric lamp responsive to the switching circuit, both being disposed in parallel to the light sensitive element and with respect to each other, for operating the lamp when the output signal attains a predetermined value, and a variable resistor for varying the predetermined value of the output signal, whereby the critical shutter speed at which the photographer can steadily hold the camera without wobbling the latter can be varied as desired or required.

3,824,607
SHUTTER OPERATING APPARATUS FOR CAMERA

Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 9, 1973, Ser. No. 358,792
Claims priority, application Japan, May 30, 1972, 47-54085
Int. Cl. G03b 9/40, 9/62
U.S. Cl. 354—50 14 Claims





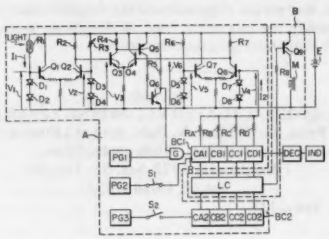
An apparatus comprising a sector opening and closing member for opening and closing sectors by reciprocal pivotal movement, a sector driving member movable forward by a shutter release action and backward by a shutter cocking action and engageable with the sector opening and closing member during the forward movement to move the opening and closing member pivotally, and a movable member supporting the driving member to shift the driving member upon the shutter release action to a position where the driving member is engageable with the opening and closing member, before the driving member is initiated into operation. Prior to the return of the sector driving member to its cocked position during the shutter cocking operation, the returning movement of the movable member brings the sector driving member to a position where it is free of engagement with the sector opening and closing member.

3,824,608
ELECTRIC SHUTTER CIRCUIT

Kenji Toyoda, Tokyo, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Sept. 13, 1973, Ser. No. 396,705
Claims priority, application Japan, Sept. 20, 1972, 47-93679
Int. Cl. G03b 7/08; G01j 1/44; H03k 19/14
U.S. Cl. 354—50 14 Claims

An electric shutter control includes a first circuit which counts and memorizes the number of first pulses, which is inversely proportional to the intensity of light reflected from an object to be photographed, and generates and counts the number of second pulses proportional to the time elapsed from the time the shutter is opened, and a second circuit,

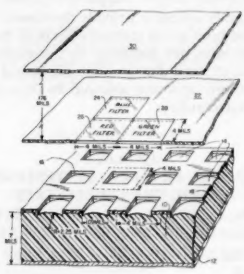


which directly compares the numbers of the first and second pulses and deenergizes an electromagnet when both numbers coincide with each other to close the shutter.

3,824,609
COLOR MICRO OPTIC APPARATUS

George J. Tevick, Leonia, N.J., assignor to Personal Communications, Inc., Stamford, Conn.

Filed Feb. 14, 1973, Ser. No. 332,284
Int. Cl. G03b 33/14
U.S. Cl. 354—102 17 Claims



A color micro optic apparatus which employs black and white photographic film in taking and yet produces color images upon readout. Distributed sets of contiguous color filters, each set having (for example) red, green, and blue filters, are sequentially aligned with corresponding sets of lensettes of microfiche. In use as a camera, red light activates only those emulsion portions of the microfiche which are beneath the red filters, similar discrimination occurring with the blue and green filters. After the emulsion is developed only those emulsion areas beneath filters which have passed light are transparent. For readout, the developed emulsion and filters receive white light (in the opposite direction) to reconstruct a color image.

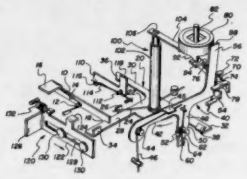
3,824,610
CAMERA ADAPTED FOR PERCUSSIVELY IGNITABLE FLASHLAMPS

Wolfgang Ort, Stuttgart-Bad Canstatt, and Michael Reibl, Sindelfingen, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,053
Int. Cl. G03b 15/04
U.S. Cl. 354—139 7 Claims

Camera includes a control member which is movable to actuate the flash firing and flash indexing mechanisms whenever

a flash unit is coupled to the camera. In a preferred embodiment, the flash firing member blocks movement of the control member and is moved to an unblocking position when a flash



unit is inserted in the camera socket. In an alternate embodiment, a separate latching lever impedes movement of the control member and is moved to an unlatched position when a flash unit is inserted in the camera socket.

3,824,611

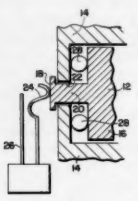
TEMPERATURE RESPONSIVE IMITATING APPARATUS FOR A PHOTOGRAPHIC CAMERA

Edwin H. Land, Cambridge, and David V. Cronin, Peabody, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1972, Ser. No. 318,228

Int. Cl. G03b *17/00*

U.S. Cl. 354—202 **12 Claims**



An exposure actuation system, preferably including an electric start switch for a photographic camera including a movable actuator button which is operative to initiate a photographic exposure only at predetermined temperatures. Depression of the movable actuator button is operative to move one electrical spring contact into electrical engagement with another spring contact for closing appropriate camera shutter circuitry. In a preferred embodiment, a liquid-filled elastic member is interposed in the path of movement of the subject actuator button. Should the photographic camera be subjected to temperatures below the freezing point of the liquid, the liquid freezes and prevents depression of the actuator button.

3,824,612

MECHANISM FOR INDICATING CONDITION OF OPERABILITY OF AN ELECTRICALLY CONTROLLED CAMERA SHUTTER

Naoyuki Uno, 7-6, Kumano-cho and Katsuhiko Nomura, 38-6 Tsukujoshi-cho both of Kawagoe, Japan

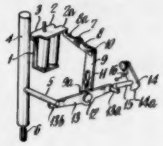
Filed Sept. 12, 1973, Ser. No. 396,946

Claims priority, application Japan, Sept. 19, 1972, 47-93236

Int. Cl. G03b *9/08, 17/18*

U.S. Cl. 354—266 **9 Claims**

A mechanism for preventing the opening of a shutter in a camera having an electronic shutter control network in the event of insufficient battery voltage or a defect in the control, includes a solenoid which is energized upon the initiation of, but before the shutter opening release operation, to releasably lock the shutter closing operation by the attraction and advance of the solenoid armature. A shutter release member is operatively coupled by a lever to the latch member of the



shutter opening mechanism upon sufficient solenoid retention of the armature in advanced position and the solenoid release of the armature effects the release of the lever to a position uncoupling the shutter release member from the latch member. A voltage discriminating circuit couples the shutter control network to the solenoid.

3,824,613

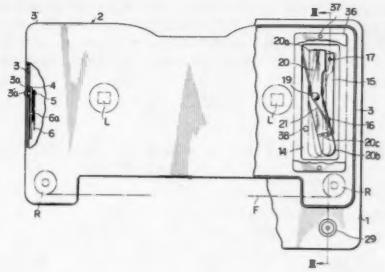
MAGAZINE HAVING LATCH MEANS

Takao Matsui, No. 11-6, Nozawa 1-chome, Setagaya-ku, Tokyo, Japan

Filed Sept. 21, 1972, Ser. No. 290,848

Int. Cl. G03b *19/04*

U.S. Cl. 95—31 CA **2 Claims**



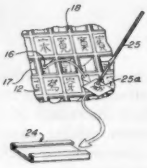
Magazine having a casing body and a cover plate and provided with latch means for preventing the cover plate from being inadvertently removed from the casing body. The latch means comprises a swingable lever pivoted to either one of the casing body and the cover plate at the inside thereof so as to be swung between the latching position and the unlatching position. The swingable lever is normally urged toward the latching position by a spring and is provided with a hook at its free end having an inclined outer edge with respect to the length of the swingable lever. A latch pin is secured to the other of the casing body and the cover plate at a position interior thereof. When the cover plate is fitted with the casing body, the outer edge of the hook slidably abuts against the latch pin so that the swingable lever is swung toward the unlatching position against the action of the spring and, after the latch pin slides over around the outer edge of the hook, the swingable lever is swung toward the latching position by the action of the spring so as to latch the latch pin by the hook thereby preventing the cover plate from being removed from the casing body. The swingable lever is provided with a magnetically operable portion so that the swingable lever can be

swung toward the unlatching position to permit the cover plate to be removed from the casing body by moving a magnet located on the outer surface of the magazine so as to attract and move the magnetically operable portion toward the unlatching position of the swingable lever.

3,824,614
EQUIPMENT FOR MANUFACTURING PRINTED MATTER

David Sun Shew, 19 Olive Ave., Larkspur, Calif. 94939

Filed Apr. 24, 1972, Ser. No. 246,708
Int. Cl. G03b 15/00
U.S. Cl. 354—292 2 Claims

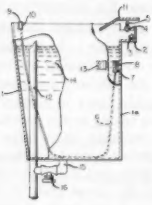


Individual, relatively small sheets bearing different characters are removably disposed in superposed relation in multiple replenishable piles thereof in at least one character-selector board provided with an index to the characters to facilitate locating and readily removing each small sheet bearing a selected character from a specific pile thereof in said board. A plurality of composition strips receive the small sheets of selected characters removed from said board to form on such strips words, sentences and paragraphs made up from said small sheets of selected characters. Enlarging or reducing platemaking cameras photograph said made up composition strips and prepare paper plates therefrom for introduction into an offset printing press to afford the end product of printed matter which may serve as copy for newspapers, magazines, catalogues and the like.

3,824,615
AUTOMATIC FILM PROCESSOR WASH TANKS HAVING WASHED SQUEEGEE ROLLERS

Tadashi Shintani, and Shingo Yasuda, both of Kyoto, Japan, assignors to LogEtronics Inc., Springfield, Va.

Filed Apr. 9, 1973, Ser. No. 349,493
Int. Cl. G03d 1/04
U.S. Cl. 354—331 10 Claims

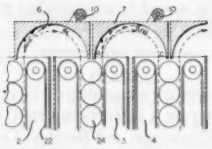


A photographic film processor comprises at least one treatment tank containing a processing chemical, e.g. a fixer, and a water-containing wash tank disposed adjacent the treatment tank. A pair of squeegee rollers located between the two tanks is operative to transport a sheet of film being processed from the treatment tank into the wash tank. One or more jets of water are projected onto the squeegee rollers to prevent the accumulation of residues thereon, and water flowing off the rollers is directed into the wash tank. The wash tank may be provided with a removable net for catching and facilitating removal of a sheet of film being processed.

3,824,616
AIR-JET CROSSOVER FOR AUTOMATIC FILM PROCESSORS

Kazuhiko Uchida, Kyoto, Japan, assignor to LogElectronics Inc., Springfield, Va.

Filed May 7, 1973, Ser. No. 357,738
Claims priority, application Japan, Sept. 28, 1972, 47-113079
Int. Cl. G03d 3/12
U.S. Cl. 354—339 6 Claims

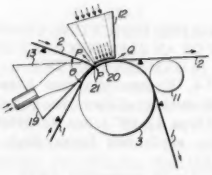


An automatic film processor, of the type comprising a plurality of treatment tanks associated with a transport system for transporting a sheet of film to be processed through said tanks in succession, is provided with an improved crossover guide structure positioned between an adjacent pair of the tanks for guiding a sheet of film as it is transported from one to the next of said pair of tanks. An air blower and associated duct are provided to produce positive air pressure adjacent the interior of the crossover guide structure to pneumatically urge a sheet of film away from the guide structure as the sheet is transported past the guide structure, to minimize faulty processing or scratching of the film sheet.

3,824,617
MAGNETIC TAPE COPYING APPARATUS

Fukashi Kobayashi, Hirakata; Mitsuaki Ono, Katano; Masahiko Yatsugake, Hirakata, and Yukihiro Fukushima, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 12, 1972, Ser. No. 243,152
Claims priority, application Japan, Apr. 16, 1971, 46-2460; July 16, 1971, 46-63174[U]; Apr. 19, 1971, 46-25478; July 16, 1971, 46-63175[U]; Apr. 22, 1971, 46-26592; Aug. 7, 1971, 46-70494[U]; Apr. 16, 1971, 46-29652[U]; Aug. 23, 1971, 46-76049[U]; June 7, 1971, 46-48094[U]; June 8, 1971, 46-48497[U]; July 12, 1971, 46-61431[U]; July 12, 1971, 46-61432[U]
Int. Cl. G11b 5/86
U.S. Cl. 360—16 18 Claims



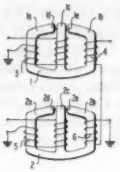
A magnetic tape copying apparatus employing the so-called thermal transfer process wherein a slave tape heated to a tem-

perature near the Curie point thereof and a master tape having a signal recorded thereon are put together with the magnetic surfaces thereof in contract with each other and cooled, whereby the signal on the master tape is transferred onto the slave tape, said apparatus comprising novel tape heating and compressing means which makes possible the use of a tape having a high coercive force and a high Curie point, such as CrO_2 tape, as the slave tape which could not be used in conventional transfer processes, and which enables quality copied tapes to be obtained at a high efficiency without causing physical damage to the slave tape.

3,824,618
MAGNETIC HEAD AND SIMULATED FOUR-CHANNEL STEREO SYSTEM

Masayuki Murai, Tokyo, Japan, assignor to Pioneer Electronics Corporation, Tokyo, Japan

Filed Oct. 10, 1972, Ser. No. 296,491
Claims priority, application Japan, Oct. 7, 1971, 46-92328[U]; Oct. 13, 1971, 46-94482[U]
Int. Cl. G11b *5/20, 5/28*
U.S. Cl. 360—22 **4 Claims**

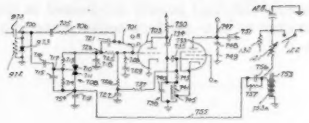


A magnetic reproducing head for reproducing a two-channel stereo signal as a simulated four-channel signal. The head reproduces the first channel signal, the second channel signal, a signal equal to the difference between the first and second channel signals and the difference between the second and first channel signals.

3,824,619
TRANSDUCER SYSTEM

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 848,992, Aug. 11, 1969, abandoned, and a continuation-in-part of Ser. No. 34,504, May 4, 1970, Pat. No. 3,705,954, and a continuation-in-part of Ser. No. 62,601, Aug. 10, 1970, Pat. No. 3,683,107, said Ser. No. 848,992, Division of Ser. No. 401,832, said Ser. No. 62,601, Continuation of Ser. No. 528,934. This application Nov. 18, 1971, Ser. No. 199,977
Int. Cl. H04n *5/76*
U.S. Cl. 360—36 **2 Claims**

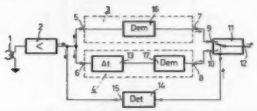


A longitudinal scan transducing apparatus for use with a television receiver comprising a magnetic transducer head having transverse conductors for supplying high frequency bias, tape transport features including a damping pad acting on the tape adjacent the head for damping high frequency vibration at the head, head shifting and tape reversal features, and television set adapter circuitry for supplying a wide-band video signal and for stabilizing reproduced sync signals.

3,824,620
CIRCUIT ARRANGEMENT FOR COMPENSATING DROP-OUT IN THE REPRODUCTION OF SIGNALS RECORDED ON A RECORD CARRIER

Erich Langer, Sudstadt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 13, 1972, Ser. No. 271,348
Claims priority, application Austria, July 15, 1971, 6162/71
Int. Cl. H04n *5/78*
U.S. Cl. 360—38 **10 Claims**

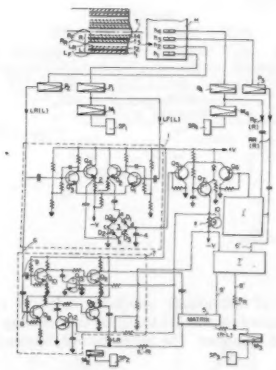


A playback system for a video signal recorded on a carrier signal has a drop-out compensation circuit. This circuit has two channels, one of which delays the reproduced signal. If a drop-out occurs a switch selects the delayed channel. Demodulators are coupled to the switch in each channel and compensate for the switching time of the switch.

3,824,621
MULTI-CHANNEL TAPE PLAYING DEVICE

Kozi Suzuki, Yoshida Oizumi Gumma, Japan, assignor to Tokyo Sanyo Electric Co., Ltd., Gunma and Sanyo Electric Co., Ltd., Osaka, both of, Japan

Filed June 8, 1972, Ser. No. 261,098
Claims priority, application Japan, June 8, 1971, 46-11778; June 10, 1971, 46-11779
Int. Cl. H04h *5/00*; **G11b** *21/08, 23/18*
U.S. Cl. 360—78 **6 Claims**

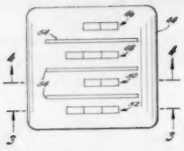


A device for playing the voices recorded in the tapes in such a form as to assure a perfect compatibility between the two channel stereo program tape and the four channel stereo program tape, wherein upon automatically discerning, at the time of playing, whether the tape program belongs to the two channel or four channel, the result is indicated to the operator, and in the case of four channel program tape, the signals of each channel are individually reproduced, while in the case of two channel program tape, they are automatically reproduced in simulation to the four channel program.

3,824,622
MULTICHANNEL MAGNETIC HEAD

Mitsugi Kashimoto, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 164,661. This application Apr. 20, 1973, Ser. No. 352,886
Int. Cl. G11b *5/28*
U.S. Cl. 360—121 **1 Claim**

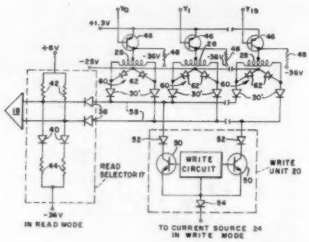


A multichannel magnetic head of the type combining the functions of erasing, recording and playback comprises a plurality of magnetic core units of two types separated by magnetic shielding means. The first type of core unit is of the conventional three-leg construction utilizing a common central core and is effective to generate recording and/or erasing signals. The second type of core is used for playback only and comprises a single generally U-shaped core having a balanced playback winding. The two types of core units are arranged alternately along the head in a direction perpendicular to tape travel whereby inductive coupling within each unit is virtually eliminated, thereby to maintain a good signal to noise ratio and an improved tone quality.

3,824,623
SYSTEM FOR REDUCING CROSS TALK OF UNSELECTED MAGNETIC HEADS INTO A SELECTED HEAD

George C. Gucker, Old Bethpage, N.Y., assignor to Potter Instrument Company, Inc., Plainview, N.Y.

Filed Dec. 14, 1972, Ser. No. 314,929
Int. Cl. G11b *5/44*
U.S. Cl. 360—124 **11 Claims**

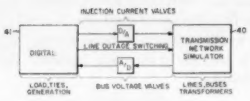


A plurality of individually selectable magnetic read/write heads are coupled in parallel to signal transmitting circuitry, such as a read amplifier. The magnetically responsive coil in each head is equipped with a low impedance shunt circuit including a pair of opposed, series-connected diodes having their common junction tied to a reference voltage. Additional head-isolating diodes connect the ends of each head coil to the signal transmitting circuitry. A head is selected by applying a predetermined voltage to a given head coil to forward-bias the associated head-isolating diodes. The head-isolating diodes for the unselected heads, however, remain reverse-biased by virtue of a reference voltage applied to each of the unselected head coils. By virtue of the relationship between the reference voltage applied to the coil and the reference voltage applied to the shunt diode junction, the diodes in each shunt circuit for an unselected head are forward-biased. Accordingly, input signals picked up by an unselected head are effectively shunted out and not permitted to superimpose additive noise on the read or write signal associated with the selected head, whose shunt circuit is rendered inoperative.

3,824,624
SYSTEM AND METHOD FOR CONVERGING ITERATIONS FOR LOADFLOW SOLUTIONS IN A HYBRID LOADFLOW COMPUTER ARRANGEMENT HAVING TRANSIENT STABILITY ANALYSIS CAPABILITY

Norman R. Carlson, Export; Paul H. Haley, Pittsburgh, both of Pa., and Mark K. Enns, Ann Arbor, Mich., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1972, Ser. No. 255,050
Int. Cl. G06j *1/00*; **G06f** *15/06, 15/56*
U.S. Cl. 444—1 **4 Claims**



A hybrid loadflow computer arrangement includes an analog network simulator and a digital computer which interchange signals through analog input and output circuitry. The analog simulator includes modular bus, generator, load, tie line and line DC circuits representative of electric power system buses, generators, loads, tie lines and lines. The analog simulator provides tie line currents and external voltages and load currents and voltages to the digital computer for the determination of tie powers and load powers as a function of corresponding currents and voltages and the determination of whether these powers are within predetermined tolerances. The digital computer and the analog simulator iteratively operate to provide new tie powers and load powers as a function of tie powers and load powers determined in the next preceding iteration so as to produce convergence to a loadflow solution.

DESIGNS

JULY 16, 1974

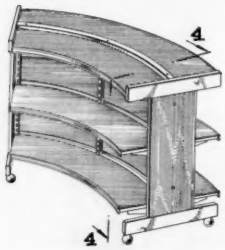
232,058
BOTTLE-HOLDING INFANT JACKET
Connie A. Palomares, 15240 Kittridge, No. 312, Van Nuys, Calif. 91405
Filed June 29, 1972, Ser. No. 267,368
Term of patent 14 years
Int. Cl. D2—*05*
U.S. Cl. D2—229

232,059
NECK ORNAMENT
Peter E. Kurtz, 733 NE. 13th Court, Apt. 18, Fort Lauderdale, Fla. 33304
Filed Sept. 15, 1972, Ser. No. 289,332
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—243

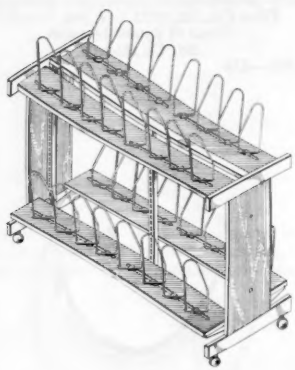
232,060
GLOVE
Alfred Mayer, Forest Hills, N.Y., assignor to Kayser-Roth Corporation, New York, N.Y.
Filed Aug. 21, 1972, Ser. No. 282,187
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—376

232,061
BUTTON OR THE LIKE
John J. Christiansen, Sheboygan, Wis., assignor to American Orthodontics Corporation, Sheboygan, Wis.
Filed Feb. 21, 1973, Ser. No. 334,323
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—436

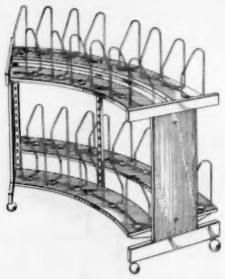
232,062
MODULAR DISPLAY CASE FOR FABRICS OR THE LIKE
Ann M. Turdo, New York, N.Y., assignor to Mod Displays, Inc., New York, N.Y.
Filed Jan. 8, 1973, Ser. No. 321,567
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*
U.S. Cl. D6—186



232,063
MODULAR DISPLAY CASE FOR FABRICS OR THE LIKE
Ann M. Turdo, New York, N.Y., assignor to Mod Displays, Inc., New York, N.Y.
Filed Jan. 8, 1973, Ser. No. 321,568
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*
U.S. Cl. D6—186

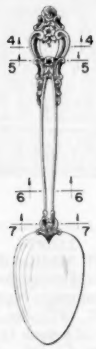


232,064
MODULAR DISPLAY CASE FOR FABRICS OR THE LIKE
Ann M. Turdo, New York, N.Y., assignor to Mod Displays, Inc., New York, N.Y.
Filed Jan. 8, 1973, Ser. No. 321,569
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*
U.S. Cl. D6—186



232,065
FOOD STORAGE DISH
Robert Daenen, Erembodegem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Apr. 19, 1972, Ser. No. 245,689
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—16

232,066
SPOON OR SIMILAR ARTICLE OF FLATWARE
Ford J. Lanzoni, Yalesville, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Nov. 15, 1972, Ser. No. 306,571
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137



232,067
SPOON OR SIMILAR ARTICLE OF FLATWARE
Siro R. Toffolon, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Nov. 3, 1972, Ser. No. 303,612
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

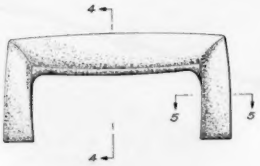
232,068
BOTTLE SCRAPER SPOON
Edith H. Hager, 9620 Watts Branch Drive, Rockville, Md. 20850
Filed Nov. 24, 1972, Ser. No. 309,188
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—181

232,069
LITTER BAG
David W. Walker, 2113 State St., New Albany, Ind. 47150
Filed Jan. 10, 1973, Ser. No. 322,451
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—193

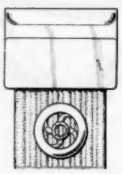
232,070
KEY
Max Wiczer, 9122 Kedvale, Skokie, Ill. 60076
Filed July 18, 1973, Ser. No. 380,488
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136

232,071
KEY
Max Wiczer, 9122 Kedvale, Skokie, Ill. 60076
Filed July 18, 1973, Ser. No. 380,956
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136

232,072
MOLDED PLASTIC LUGGAGE HANDLE
Bela G. Szabo, Carnegie, Pa., assignor to Bruce Plastics, Inc., Pittsburgh, Pa.
Filed May 18, 1972, Ser. No. 254,845
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—154



232,073
DRAPERY SLIDE FOR A CURTAIN ROD
Samuel Galietti, 1360 NE. 204th Terrace, North Miami Beach, Fla. 33162
Filed June 29, 1973, Ser. No. 375,089
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—239



232,074
BOTTLE
Howard Cooper, Suite 7707, 175 E. Delaware, Chicago, Ill. 60611
Filed Mar. 12, 1973, Ser. No. 340,076
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—28

232,075
BOTTLE
Howard Cooper, Suite 7707, 175 E. Delaware, Chicago, Ill. 60611
Filed Mar. 12, 1973, Ser. No. 340,077
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—28

232,076
BOTTLE OR SIMILAR ARTICLE
Albert Jacob, Paris, France, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Sept. 27, 1972, Ser. No. 292,766
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42

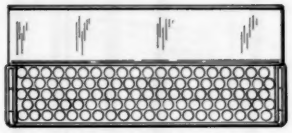
232,077
BOTTLE
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Dec. 15, 1972, Ser. No. 315,674
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—47

232,078
BOTTLE
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Nov. 6, 1972, Ser. No. 304,237
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—100

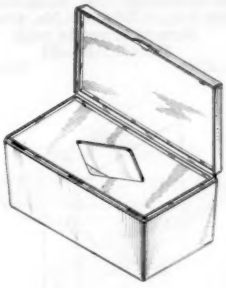
232,079
BOTTLE
Warren J. Luedtke, Racine, Wis., assignor to S. C. Johnson & Son Inc., Racine, Wis.
Filed Aug. 14, 1972, Ser. No. 280,639
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—144

232,080
JAR
Gordon A. Strand, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Nov. 6, 1972, Ser. No. 304,250
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—150

232,081
COMBINED SHIPPING AND PARTITIONING CONTAINER FOR CYLINDRICAL OBJECTS OR THE LIKE
Anthony R. Zine, Jr., Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Mar. 13, 1972, Ser. No. 234,470
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—184

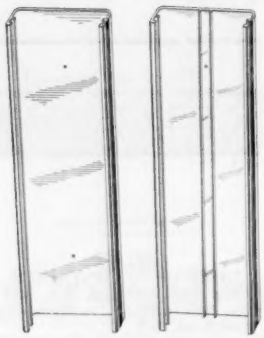


232,082
DISPENSING CONTAINER
William E. Fitzpatrick, Oakland, N.J., and Timothy F. Gary, Dover, Del., assignors to Rapid-American Corporation, New York, N.Y.
Filed Apr. 24, 1972, Ser. No. 247,258
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

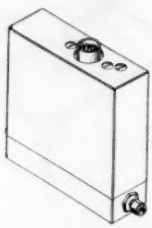


232,083
CAMPER VEHICLE
Leo V. Lano, 9620 Avenida Monterey, Cypress, Calif. 90630
Continuation-in-part of abandoned design application Ser. No. 25,605, Oct. 22, 1970. This application Oct. 20, 1972, Ser. No. 299,290
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—100

232,084
MIRROR FRAME FOR TRUCKS OR THE LIKE
Kenneth J. Fischer, Jacksonville, Fla. (% Road King Industries, Inc., P.O. Box 548, Ashburn, Ga. 31714)
Filed Dec. 1, 1972, Ser. No. 311,133
Term of patent 14 years
The portion of the term of the patent subsequent to Jan. 16, 1987, has been disclaimed
Int. Cl. D12—*16*
U.S. Cl. D12—187



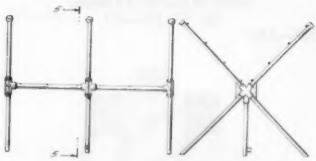
232,085
AUTOMATIC FLUID FLOW CONTROL UNIT
Walter C. Benzing, Saratoga, Calif., assignor to Applied Materials Technology, Inc., Santa Clara, Calif.
Filed Nov. 8, 1971, Ser. No. 196,875
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2 C



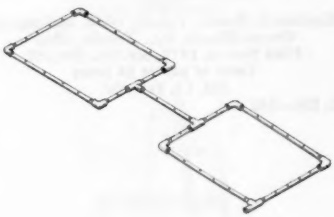
232,086
FLUID METERING VALVE
Charles H. Graham, Los Altos, Calif., assignor to Applied Materials Technology, Inc., Santa Clara, Calif.
Filed Nov. 8, 1971, Ser. No. 196,876
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—1 R

232,087
FRONT FOR AIR CONDITIONER
John J. Pink, Cedar Rapids, Iowa, and Melvin H. Boldt, Glenview, Ill., assignors to Amana Refrigeration, Inc.
Filed Jan. 2, 1973, Ser. No. 320,597
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—141

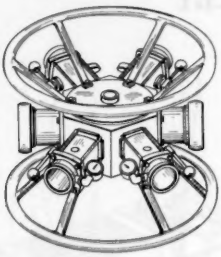
232,088
PLAYGROUND SPRINKLER
Anita Margrill, 151 W. 13th St., New York, N.Y. 10010
Filed Dec. 6, 1972, Ser. No. 312,676
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—6



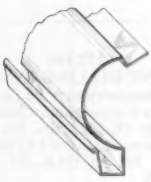
232,089
PLAYGROUND SPRINKLER
Anita Margrill, 151 W. 13th St., New York, N.Y. 10010
Filed Dec. 6, 1972, Ser. No. 312,677
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—6



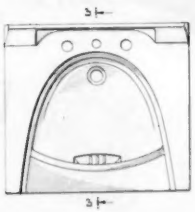
232,090
PORTABLE HYDRANT
George G. Allenbaugh, Jr., Wadsworth, Ohio, assignor to Premier Industrial Corporation, Cleveland, Ohio
Filed Oct. 20, 1972, Ser. No. 299,365
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—12



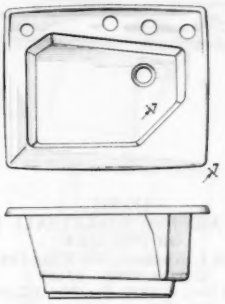
232,091
NON-CLOG GUTTER OR SIMILAR ARTICLE
John Clark, 808 Southgate, McHenry, Ill. 60050
Filed Aug. 31, 1972, Ser. No. 285,226
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45



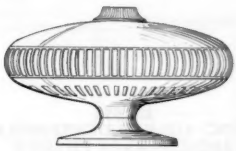
232,092
LAVATORY
Donald C. Schrock, Nevada, Mo., assignor to Crane Co., New York, N.Y.
Filed Apr. 16, 1973, Ser. No. 351,707
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



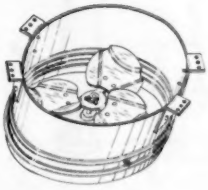
232,093
LAVATORY
Donald C. Schrock, 1013 N. West St., Nevada, Mo. 64772
Filed June 20, 1973, Ser. No. 371,793
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



232,094
VENTILATOR
Otto Bjarsch, Neugablonzer Weg 5, Traunreut, Germany
Filed May 18, 1972, Ser. No. 254,824
Claims priority, application Germany Dec. 7, 1971
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151

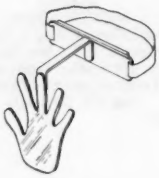


232,095
POWER FAN
Donald L. Rousey, Des Plaines, Ill., assignor to Questor Corporation, Toledo, Ohio
Filed Feb. 15, 1973, Ser. No. 332,574
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—155

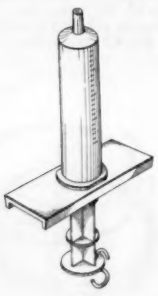


232,096
DENTAL FLOSS HOLDER
Gary Lee Fender, 820 Crescent Drive, Sidney, Ohio 45365
Filed Oct. 24, 1972, Ser. No. 300,300
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—1 D

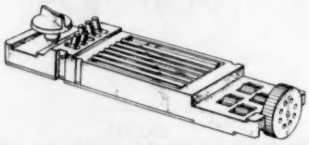
232,097
TRAINING AID FOR BASKETBALL PLAYERS OR THE LIKE
Robert L. Kirchner, 544 Kling Drive, Dayton, Ohio 45419
Filed Dec. 4, 1972, Ser. No. 312,204
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R



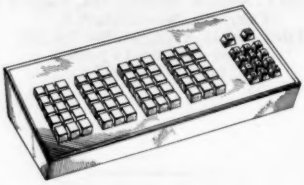
232,098
TEACHING AID FOR DEMONSTRATING PRINCIPLES IN PHYSICS
John Lawlor, Tappan, N.Y., and John Sgombick, Ramsey, N.J., assignors to Xerox Corporation, Stamford, Conn.
Filed Dec. 26, 1972, Ser. No. 318,312
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R



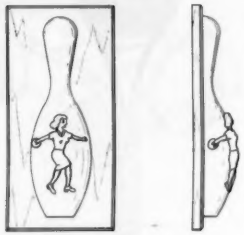
232,099
RADIO RECEIVER TUNER
Hirohiko Tonari, Kyoto, Kazumi Iwasaki, Moriguchi, Minoru Ohwada, Suita, and Ippei Kurihara, Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 6, 1972, Ser. No. 215,982
Claims priority, application Japan Sept. 10, 1971
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—14 L



232,100
TELEPHONE DIALING INSTRUMENT
Ronald Binks, Chambersburg, Pa., assignor to Global Systems Design Corporation, Chambersburg, Pa.
Filed Aug. 17, 1972, Ser. No. 281,400
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

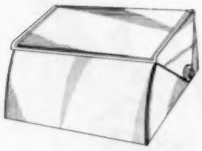


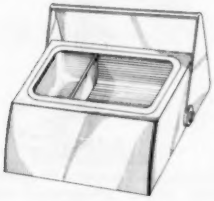
232,101
BOWLING TROPHY
Chester Urban, 2832 Wilmot St., Philadelphia, Pa. 19137
Filed Feb. 15, 1973, Ser. No. 332,842
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—28 A



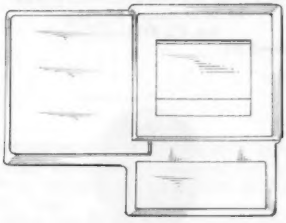
232,102
FLUID-FLOW INDICATOR FOR AN AQUARIUM FILTER OR THE LIKE
Allan H. Willinger, New Rochelle, and Albert J. Dinnerstein, Brooklyn, N.Y., and Avihu Kagan, Union, N.J., assignors to Metaframe Corporation, Maywood, N.J.
Filed Apr. 10, 1972, Ser. No. 242,899
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—12

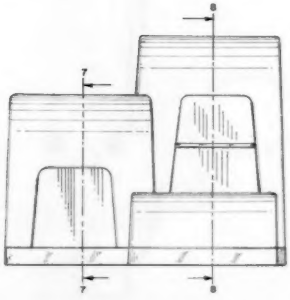
232,103
COMBINED FEEDING DISH AND COVER THEREFOR
Haruo Suzuki, Saitama, Japan, assignor to Toytown Corporation, Tokyo, Japan
Filed Feb. 14, 1973, Ser. No. 332,407
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



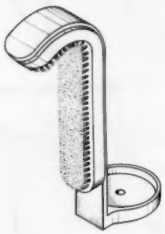


232,104
NEST BOX
Jacques Le Baigue, Westbury, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed July 12, 1972, Ser. No. 271,025
Term of patent 14 years
Int. Cl. D30—*06*
U.S. Cl. D30—41





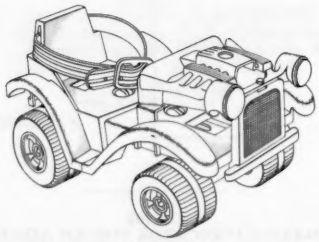
232,105
ANIMAL SCRATCHING DEVICE
Franciscus J. Claassen, 270 Ridgeway St., Philadelphia, Pa. 19116
Filed Nov. 8, 1972, Ser. No. 304,796
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—40



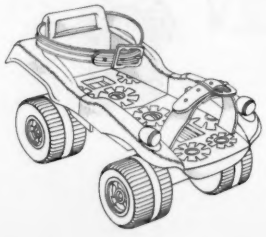
232,106
TENNIS RACQUET
Joseph K. Dana, Wilbraham, and Peter R. Flak, Northampton, Mass., assignors to Questor Corporation, Toledo, Ohio
Filed Aug. 3, 1972, Ser. No. 277,812
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 ST

232,107
TENNIS RACQUET
Joseph K. Dana, Wilbraham, Mass., assignor to Questor Corporation, Toledo, Ohio
Filed Sept. 5, 1972, Ser. No. 286,432
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST

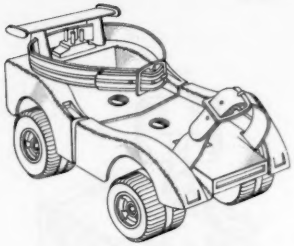
232,108
ROLLER SKATE
Daniel F. Krause, Loveland, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Aug. 9, 1972, Ser. No. 278,974
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 C



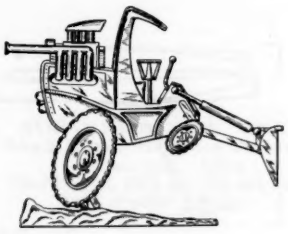
232,109
ROLLER SKATE
Daniel F. Krause, Loveland, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Aug. 9, 1972, Ser. No. 278,976
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 C



232,110
ROLLER SKATE
Daniel F. Krause, Loveland, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Aug. 10, 1972, Ser. No. 279,537
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 C

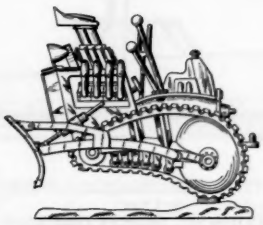


232,111
STYLIZED MODEL TOY VEHICLE
Eugene T. Daniel, Walnut, Calif., assignor to Monogram Models, Inc., Morton Grove, Ill.
Filed Aug. 31, 1972, Ser. No. 285,147
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



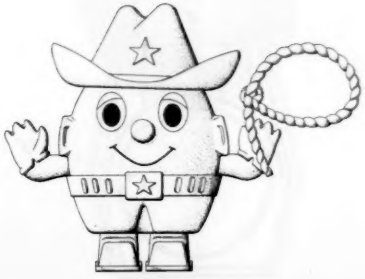
232,112
STYLIZED MODEL TRUCK
Eugene T. Daniel, Walnut, Calif., assignor to Monogram Models, Inc., Morton Grove, Ill.
Filed Aug. 31, 1972, Ser. No. 285,273
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

232,113
STYLIZED MODEL TOY VEHICLE
Eugene T. Daniel, Walnut, Calif., assignor to Monogram Models, Inc., Morton Grove, Ill.
Filed Aug. 31, 1972, Ser. No. 285,274
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

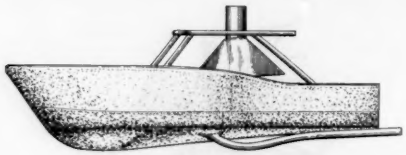


232,114
TOY SPINNER
Eugene J. Echterling, Woodland Hills, Calif., assignor to Questor Corporation, Toledo, Ohio
Filed Jan. 24, 1973, Ser. No. 326,489
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AH

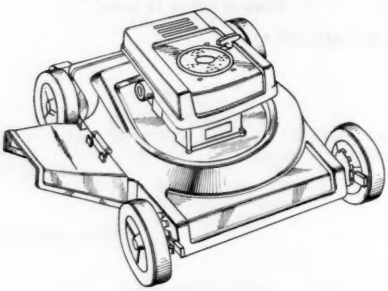
232,115
HUMPTY DUMPTY SHERIFF TOY
Paul L. Luzius, Brentwood, Tenn., and Jerrold J. Krumholz, West Orange, N.J., assignors to Kusan, Inc., Nashville, Tenn.
Filed May 22 1973, Ser. No. 362,654
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AD



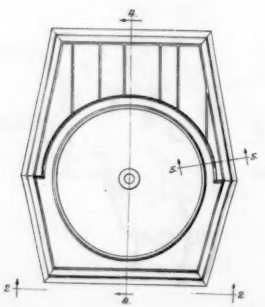
232,116
TOY JET PROPELLED BOAT
Demetrios Theodosis, 2177 31st St., New York, N.Y. 11105
Filed Aug. 22, 1973, Ser. No. 390,547
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 JJ



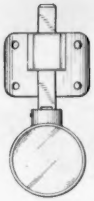
232,117
COMBINED HOUSING, DEFLECTOR AND MOTOR SHROUD ARRANGEMENT FOR A ROTARY LAWNMOWER
Larry M. Cognata, Nashville, Tenn., assignor to The Murray Ohio Manufacturing Co., Nashville, Tenn.
Filed Jan. 19, 1973, Ser. No. 324,972
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 B



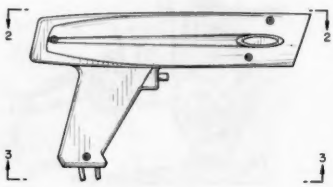
232,118
CLOCK HOUSING
Richard K. Thomas, Elk Grove Village, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed June 30, 1972, Ser. No. 267,787
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



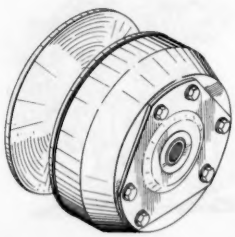
232,119
FIBEROPTIC ILLUMINATION ASSEMBLY FOR SURGEON'S HEADBAND
Jacobus Kloots, Sturbridge, and Rato Buhler, Brimfield, Mass., assignors to Applied Fiberoptics Incorporated, Southbridge, Mass.
Filed Feb. 2, 1973, Ser. No. 328,937
Term of patent 14 years
Int. Cl. D26—*99*
U.S. Cl. D48—20 H



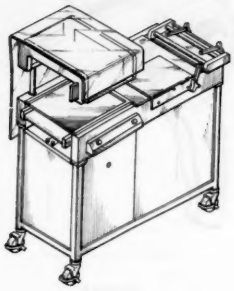
232,120
TIMING LIGHT
Edwin L. Schwartz, Los Angeles, Calif., assignor to Rite Autotronics Corporation, Los Angeles, Calif.
Filed Nov. 16, 1972, Ser. No. 307,160
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6 R



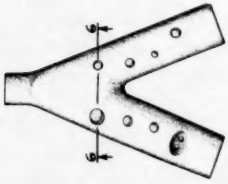
232,121
TORQUE-CONVERTER CLUTCH
Stephen J. Hoff, Richmond, Ind., assignor to Hoffco, Inc., Richmond, Ind.
Filed Oct. 6, 1972, Ser. No. 295,514
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D55—1 G



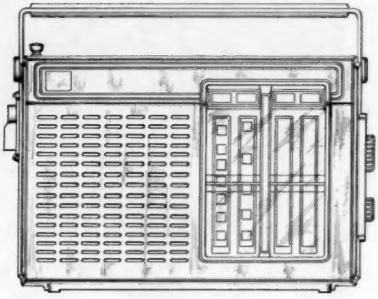
232,122
PACKAGING MACHINE FOR COMESTIBLES
Bernard Katz, Greenwich, Conn. (% Tele-sonic Trescott, Division of Empsco, Inc., 18–35 38th St., Long Island City, N.Y. 11105)
Filed Jan. 2, 1973, Ser. No. 320,494
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D55—1 C



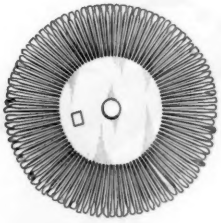
232,123
SYRINX WIND INSTRUMENT
John S. Sumner, 728 N. Sawtelle Ave., Tucson, Ariz. 85716
Filed June 21, 1972, Ser. No. 264,720
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D56—1 C



232,124
MULTIBAND PORTABLE RADIO
Paul J. Klucznik, Manlius, N.Y., assignor to General Electric Company
Filed Jan. 12, 1973, Ser. No. 322,934
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4 B



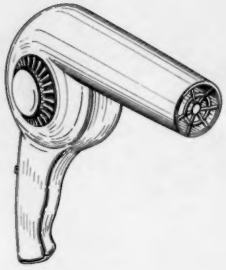
232,125
CHARACTER PRINT MEMBER
Sen Lin Lee, Oakland, Calif., assignor to Xerox Corporation, Stamford, Conn.
Filed Feb. 15, 1973, Ser. No. 332,942
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—11 R



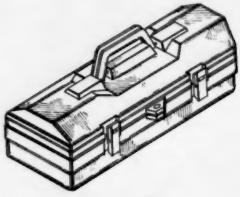
232,126
TELLER STATION
Ronald I. Conway, Port Ewen, Robert V. Jones, Kingston, and David L. Schaum, Woodstock, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 14, 1973, Ser. No. 370,183
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D64—11 B

232,127
FINGERNAIL CLIPPER OR THE LIKE
Bernard M. Rock, 1311 York St., Denver, Colo. 80206
Filed Nov. 20, 1972, Ser. No. 308,016
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 B

232,128
ELECTRIC HAIR DRYER
Leandro P. Rizzuto, Brooklyn, N.Y., assignor to Continental Hair Products, Inc.
Filed Apr. 12, 1973, Ser. No. 350,432
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F

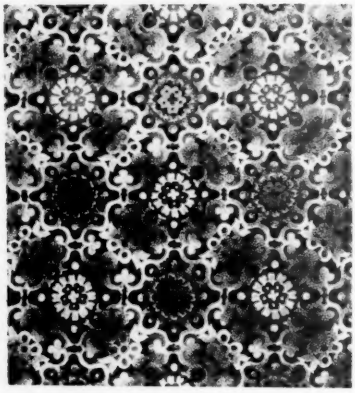


232,129
TOOL BOX OR SIMILAR ARTICLE
Jack Evans, Flossmoor, Ill., assignor to J. E. Industrial Molding Inc., Grant Park, Ill.
Filed Aug. 18, 1972, Ser. No. 281,989
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1 R

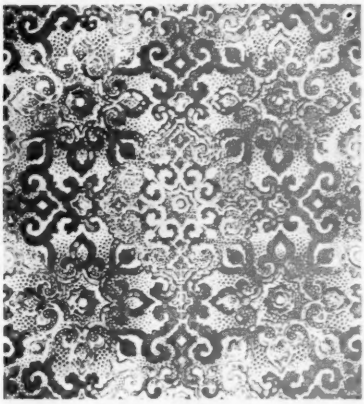


232,130
PURSE
David L. Burkett, 2566A Alpaca Pass, Dallas, Tex. 75266
Filed Jan. 12, 1973, Ser. No. 322,909
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F

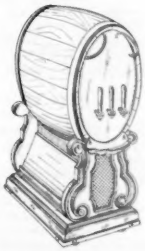
232,131
CARPET
Evan Armstrong, Jr., and Doyle Hill, Dalton, Ga., assignors to World Carpets, Dalton, Ga.
Filed Nov. 9, 1972, Ser. No. 305,111
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D92—4



232,132
CARPET
Jon Blumenaus, Dalton, Ga., assignor to World Carpets, Dalton, Ga.
Filed Nov. 9, 1972, Ser. No. 305,114
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D92—4



232,133
COMBINED WINE DISPENSER AND CART
Irving L. Metzner, Dover, and Daniel O'Connell, Pound Ridge, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Jan. 17, 1973, Ser. No. 324,377
Term of patent 14 years
Int. Cl. D9—*01*; D12—*02*
U.S. Cl. D94—3 C



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF JULY, 1974

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Adamson, Gerald P., to Dresser Industries, Inc. Digital count rate meter and depth delay system for well logging. 3,824,533, Cl. 340-18.0dc.

Addor, Roger Williams; and Lamb, Glentworth, to American Cyanamid Company. Thiosemicarbazone fungicides. 3,824,317, Cl. 424-277.000.

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Akiyama, Tadashi; Fukuda, Ryuhei; Ando, Masanobu; Wada, Norikazu; Umeda, Toshio; and Shiga, Tatsuhide, to Honeywell Inc. Pneumatic control apparatus. 3,823,725, Cl. 137-86.000.

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Alger, Trygve O., to Harrel Incorporated. Controller with digital integration. 3,824,479, Cl. 328-69.000.

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Anderson, Arnold L., to Michigan Chemical Corporation. Polyester plastic compositions containing halogenated aryl flame retardants. 3,824,209, Cl. 260-45.90r.

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Anderson, Bror E.; Schick, Margery L.; and Wedyck, Janis E., to Weber Marking Systems, Inc. Stencil sheet and method of making an imaged stencil sheet. 3,824,117, Cl. 117-35.500.

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Balzer, Norbert R.; and Enk, Larry G., to Park-Ohio Industries, Inc. Inductor for inductively heating a rotating workpiece. 3,824,367, Cl. 219-10.790.

Bangor Punta Operations, Inc.: *See—*
Miller, Lester, 3,823,431.

Baram, Martin. Sludge ejecting centrifuge. 3,823,868, Cl. 233-20.00.

Baranwal, Krishna C.; and Bauman, Richard G., to Goodrich, B. F., Company, The. Rubber tread compositions. 3,824,206, Cl. 260-33.6aq.

Bardash, Irwin; and Schlotterhausen, Christian, to United States of America, Air Force. Temperature compensated latching ferrite phase shifter. 3,824,502, Cl. 333-24.100.

Barenyi, Bela, to Daimler-Benz AG. Arrangement of bumper in motor vehicles. 3,823,968, Cl. 293-84.000.

Barker Manufacturing Company, Inc.: *See—*
Haswell, Charles K., 3,824,599.

Barker, Norman H.; and Barlow, Edward A., to General Electric Company. Liquid filled capacitor casing with sealed aluminum cover. 3,824,327, Cl. 174-17.01f.

Barker, Wilson A., to Lord Corporation. Polyisocyanate-aryl dioxime adducts. 3,824,217, Cl. 260-77.50r.

Barlow, Edward A.: *See—*
Barker, Norman H.; and Barlow, Edward A., 3,824,327.

Barnes, Edward; and Fergusson, Ian Douglas, to BP Chemicals International Limited. Submersible pump. 3,824,042, Cl. 417-424.000.

Barnett, Michael Ian Max, to Mole-Richardson (Stage & Studio Engineering) Limited. Apparatus for moving scenery. 3,823,918, Cl. 254-141.000.

Barth, Edwin F.: *See—*
Caldwell, David H.; and Barth, Edwin F., 3,824,185.

Bartlett, Christopher Leslie, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Inspection machine. 3,823,483, Cl. 33-174.0pa.

BASF Wyandotte Corporation: *See—*
Narayan, Thirumurti L.; Cenker, Moses; Kan, Peter T.; and Patton, John T., Jr., 3,824,239.
Narayan, Thirumurti L.; Cenker, Moses; Kan, Peter T.; and Patton, John T., Jr., 3,824,240.
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Bates, Charles F.: *See—*
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Bates, Roy G.; and Dahl, William R., to Honeywell, Inc. Solenoid actuated recording apparatus. 3,824,603, Cl. 346-141.000.

Battle Creek Packaging Machines, Inc.: *See—*
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Bauer, Eugene C.: *See—*
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Bauer, Manfred; Hellberg, Gerhard; and Reiniger, Friedrich, to U.S. Philips Corporation. Device for X-ray photography, in particular for mammography. 3,824,397, Cl. 250-320.000.

Bauer, Michael E.: *See—*
Bauer, Terrence E.; Bauer, Michael E.; and Bauer, Eugene C., 3,823,875.

Bauer, Terrence E.; Bauer, Michael E.; and Bauer, Eugene C. Burner nozzle tip for pulverized coal and method for its production. 3,823,875, Cl. 239-419.500.

Bauman, Richard G.: *See—*
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Bausch & Lomb Incorporated: *See—*
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Baxter Laboratories, Inc.: *See—*
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Bayer Aktiengesellschaft: *See—*
Dietrich, Werner; Wagner, Kuno; Richert, Karl Hartwig; Kleimann, Helmut; Konig, Christian; and Meckel, Walter, 3,824,266.
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Beall, Glenn L.: *See—*
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Beard, Terry D., to Hughes Aircraft Company. Alternating current liquid crystal light valve. 3,824,002, Cl. 350-160.20c.

Beaugrand, Claude; and Ermoglio, Roger, to Thomson-CSF. Diode phase modulator. 3,824,499, Cl. 332-16.00r.

Beaussay, Guy; Morand, Jean Francois; and Rossignol, Pierre, to Electronique Marcel Dessault. Apparatus for maintaining electronic equipment in an airplane below a certain temperature. 3,824,598, Cl. 343-705.000.

Beaver, David Karl: *See—*
Stern, Sidney Charles; Eldridge, Ralph Gray; Johnson, John Clark; and Beaver, David Karl, 3,824,454.

Beccu, Klaus. Negative electrode of titanium-nickel alloy hydride phases. 3,824,131, Cl. 136-20.000.

Becker, Hans: *See—*
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Bell & Howell Company: *See—*
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Bell Telephone Laboratories Incorporated: *See—*
Awipi, Mebenin; Kitsopoulos, Sotirios Constantine; and Levinstone, Donald Steven, 3,824,413.
Bergman, John George, Jr.; and Crane, Glen Robert, 3,824,098.
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Benedikter, Karl, to Patentanstalt Fur Neue Baustoffe. Housing for equipment having rotating tools for treating lumpy to liquid materials. 3,823,919, Cl. 259-2.000.

Benowitz, Sander. Electromagnetic material handling system utilizing offset pole spacing. 3,824,516, Cl. 335-284.000.

Berg, Edward A., to Data Transmission Company. Data transmission network. 3,824,597, Cl. 343-204.000.

Berg, Knut Ivar. Rotary hydraulic device with nutating gear. 3,823,649, Cl. 91-480.000.

Bergey, John M., to HMW Industries, Inc. Solid state watch display switch. 3,823,550, Cl. 58-50.00r.

Bergles, Joseph L.; and Nelson, Marvin A. Water treatment filter bed for sewage systems. 3,823,825, Cl. 210-170.000.

Bergman, John George, Jr.; and Crane, Glen Robert, to Bell Telephone Laboratories, Incorporated. Pyroelectric copying device. 3,824,098, Cl. 96-1.500.

Bergmann, Ewald, to Schuler, L., GmbH. Apparatus for the alignment of blanks for motor plates. 3,823,460, Cl. 29-203.001.

Berkovits, Barouh V.; and Denouter, Pieter J., to Lewis, Edward L. and American Optical Corporation. Extra-corporeal medical instrument electrical connector. 3,824,556, Cl. 339-268.00s.

Berner, Theodor. Rolling toy hoop. 3,823,507, Cl. 46-220.000.

Berry Metal Company: *See—*
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Bertrand, Arthus, S.A.: *See—*
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Betz Laboratories, Inc.: *See—*
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Shema, Bernard F.; Brink, Robert H., Jr.; Swered, Paul; and Justice, Roger L., 3,824,318.

Beusink, Bernard Joseph, to U.S. Philips Corporation. Apparatus equipped with a single-phase synchronous motor and a starting coupling. 3,824,415, Cl. 310-41.000.

Beutler, Hans, to Friedrich Maurer Soehne, Firma. Expansion gap sealing device. 3,824,025, Cl. 404-48.000.

Bezold, Karl-Heinz: *See—*
Forster, Johannes; Bezold, Karl-Heinz; and Vitt, Gerhard, 3,824,446.

Bhat, Ghanshyam A.; and Buckley, Charles G., to Sperry Rand Corporation. Toroidal electrolytic sensor and method of manufacture. 3,823,486, Cl. 33-366.000.

Biegasik, Tadeusz Jozef: *See—*
Ankudowicz, Waclaw; Kurzyniec, Stanislaw Karol; and Biegasik, Tadeusz Jozef, 3,823,450.

Bijasiewicz, Tadeusz M.; Orr, Howard S.; and Vierling, Donald E. Method and apparatus air conditioning vehicles. 3,823,568, Cl. 62-7.000.

Bird Corporation: *See—*
Weninger, August Edwin, 3,823,738.

Bishop, Thomas M. Stabilizer for steerable wheels of a vehicle. 3,823,957, Cl. 280-94.000.

Bjork, Lars; and Erikson, Uno. Method of in vivo examination of organ functions. 3,824,399, Cl. 250-336.000.

Black and Decker Manufacturing Company, The: *See—*
Fleigle, Donald Earl, 3,823,795.
Moores, Robert Gordon, Jr., 3,824,417.

Black, Sivalls & Bryson, Inc.: *See—*
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Harlan, James T., Jr.; Pettit, Donald; Blackwell, Frederick B.; and Carter, Alan R., 3,824,149.

Blackwood, Robert K.; and Stephens, Charles R., Jr., to Pfizer Inc. 4-Oxo-4-dedimethylaminotetracycline-4,6-hemiketals. 3,824,285, Cl. 260-559.0at.

Blair Manufacturing Co.: *See—*
Harnick, Robert, 3,823,980.

Blaschke, Felix, to Siemens Aktiengesellschaft. Method for controlling asynchronous machines. 3,824,437, Cl. 318-227.000.

Blatter, Herbert Morton: *See—*
Mizzoni, Renat Herbert; and Blatter, Herbert Morton, 3,824,241.

Bleimund, Rolf, to Kannegiesser, Herbert, Kommanditgesellschaft. Device for cutting pieces fo fabric from fabric rolls. 3,823,629, Cl. 83-94.000.

Bloomfield, Francis Richard; and Cooper, Gordon Davis, to Soag Machinery Ltd. Low pressure die casting apparatus. 3,823,760, Cl. 164-113.000.

Bloomquist, Orville E. Vertical take-off and landing aircraft. 3,823,897, Cl. 244-12.00r.

Blough, Roger D., to International Mobile Machines Corporation. Portable tone decoder-encoder system. 3,824,465, Cl. 325-16.000.

Blurton, Keith F.: *See—*
Oswin, Harry G.; and Blurton, Keith F., 3,824,167.
Oswin, Harry G.; and Blurton, Keith F., 3,824,168.

Bobtex Corporation Limited, The: *See—*
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Bode, Charles H., Jr., to United States Steel Corporation. Quick release mechanism for continuous casting mold support frame. 3,823,761, Cl. 164-273.00r.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See—*
Sponholz, Richard; and Kiefer, Hans, 3,824,481.

Boekhorst, Antonius, to U.S. Philips Corporation. Audio output stage. 3,824,333, Cl. 178-5.80r.

Bogelsberg, Dieter; and Stricker, Gunter. Method of twisting elements to form an electrical cable having a twist whose direction alternates from section to section. 3,823,536, Cl. 57-34.0at.

Boggs, Jack L. Fifth wheel safety lock. 3,823,960, Cl. 280-432.000.

Boggs, Roger L.; Balzer, David John; and Haslett, Melvin, to Caterpillar Tractor Co. Track pin with vented rubber plug. 3,823,989, Cl. 305-14.000.

Bok, Hendrik F.; and St. Onge, Eugene, to In-Line Technology, Inc. Solution agitation process. 3,824,137, Cl. 156-18.000.

Boley, Robert D.; and Grass, William E., to Square D Company. Relay with time delay coil. 3,824,434, Cl. 317-141.00s.

Bollag, Werner; Gutmann, Hugo; Hegedus, Balthasar; Kaiser, Ado; Langemann, Albert; Muller, Marcel; and Zeller, Paul, to Hoffman-La Roche Inc. Substituted hydrazine derivatives and process for the manufacture thereof. 3,824,288, Cl. 260-565.000.

Bolton, Theodore S., to Carrier Corporation. Apparatus for opening exhaust and vent ports of an air conditioning unit. 3,823,574, Cl. 62-262.000.

Bombardi, Aldo L. Page turning mechanism. 3,823,638, Cl. 84-503.000.

Boom, Abraham A., to Celanese Corporation. Vacuum lock for plasma treatment of substrates. 3,823,489, Cl. 34-242.000.

Boom, Abraham A., to Celanese Corporation. Method for plasma treatment of substrates. 3,824,398, Cl. 250-325.000.

Boosen, Karl-Josef, to Lonza Ltd. Process for the production of tetronic acid. 3,824,255, Cl. 260-343.600.

Borden, John V. Pulsed air toothbrush and method. 3,823,710, Cl. 128-40.000.

Borello, Giuseppe. Detergent compositions and methods for making same. 3,824,189, Cl. 252-99.000.

Borg-Warner Corporation: *See—*
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Hoppesch, Joseph P., 3,823,601.
Venema, Harry J., 3,824,079.

Borner, Manfred, to Licentia Patent-Verwaltungs-GmbH. Electromechanical delay line wherein core exhibits higher mean refractive index than envelope. 3,824,505, Cl. 333-30.00r.

Bornzin, James H.; and Swanson, William C., to International Harvester Company. Sickle bar mower and drive therefor. 3,823,534, Cl. 56-295.000.

Bosch, Robert, GmbH: *See—*
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Mutschler, Ulrich; and Rittmannsberger, Norbert, 3,823,696.
Tittmann, Egon; and Rometsch, Werner, 3,823,558.

Bosse, Frank, to Windmoller & Holscher. Method of impulse welding layers of plastic material. 3,824,144, Cl. 156-306.000.

Bott, Wolfgang: *See—*
Hirn, Helmut; and Bott, Wolfgang, 3,823,741.

Bottorff, Richard D. Football practice apparatus. 3,823,939, Cl. 273-55.00r.

Boult, Cecil Leslie, to Smiths Industries Limited. Trip mechanisms. 3,823,612, Cl. 74-100.000.

Bout, Bernardus J.: *See—*
Van Der Walt, Nicolaas; Bout, Bernardus J.; and Newington, Timothy J., 3,824,422.

Boutaine, Jean-Louis; Bujas, Roko; and Tortel, Jean, to Commissariat a l'Energie Atomique. Method and apparatus for checking positions of bottom end walls of blind holes formed in a part and in particular in a graphite block. 3,824,396, Cl. 250-312.000.

Bouy, Pierre; and Malzac, Guillaume. Dismantleable bipolar electrodes including electrical contact means between the electrode portions. 3,824,173, Cl. 204-284.000.

Bowser, Harold O. Livestock watering fountain. 3,823,692, Cl. 119-78.000.

Boyer, Wilhelm: *See—*
Ritter, Josef; Gott, Hans; Ritter, Klaus; Gamillscheg, Otto; Boyer, Wilhelm; and Ritter, Gerhard, 3,823,749.

Boyles, Robert L., to General Electric Company. Digital clock. 3,823,552, Cl. 58-125.00c.

BP Chemicals International Limited: *See—*
Barnes, Edward; and Fergusson, Ian Douglas, 3,824,042.

Brachthauser, Kunibert; and Langmaack, Jurgen, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method of increasing the cooling effect of a rotary kiln-satellite cooler and device for carrying out the method. 3,824,069, Cl. 432-80.000.

Bracich, Louis A., to Nu-Air Humidifier Corporation. Humidifier. 3,823,926, Cl. 261-106.000.

Bradley, Howard B.; and Jellinek, Maurice H., to Union Carbide Corporation. Production of silicon metal from dichlorosilane. 3,824,121, Cl. 117-106.00a.

Brady, Thomas Eugene: *See—*
Loffelman, Frank Fred; and Brady, Thomas Eugene, 3,824,188.

Brain, Alfred E., to American Express Investment Management Company. System for differential particle counting. 3,824,393, Cl. 250-222.0pc.

Bratko, Rudolph S. Infra-red process burner. 3,824,064, Cl. 431-328.000.

Braun Aktiengesellschaft: *See—*
Gersing, Eberhard, 3,824,432.

Braverman, Maynard: *See—*
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Bre, Michel, to Saint-Gobain Industries. Acoustical panels. 3,823,794, Cl. 181-33.00g.

Brehm, Michael; and Rutsch, Peter, to Freudenberg, Carl. Foam polyurethane boot with lining. 3,823,493, Cl. 36-2.50r.

Breier, Marcus. Patch pocket construction. 3,823,420, Cl. 2-247.000.

Breitbart, George J. Adjustable trouser-like garment. 3,823,419, Cl. 2-227.000.

Brennan, Ambrose K., Jr.; and Lewis, Michael J., to Teledyne, Inc. Continuous processor for treating material. 3,823,921, Cl. 259-192.000.

Brenner, William; and Cooper, Herbert. Pollution control device. 3,823,970, Cl. 294-19.00r.

Bretten, David Charles; and Chown, Peter Charles. Apparatus for marshalling elongated articles. 3,823,815, Cl. 198-33.00r.

Brewbaker, James L.: *See—*
Tomalia, Donald A.; Brewbaker, James L.; and Ojha, Narayanlal D., 3,824,269.

Bricout, Rene Leon. Automatically and continuously variable transmission. 3,823,620, Cl. 74-675.000.

Bridge, Edward W. Jr. Meat tenderizer. 3,823,441, Cl. 17-26.000.

Brienza, Michael J.; and Clobes, Arnold R., to United Aircraft Corporation. Solid state single frequency laser. 3,824,492, Cl. 331-94.50c.

Briggs & Stratton Corporation: *See—*
Gumtow, Herbert A., 3,823,700.

Bringol, Charles Ronald, to International Business Machines Corporation. Gas panel matrix driver. 3,824,580, Cl. 340-324.00m.

Brink, Robert H., Jr.: *See—*
Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, 3,824,316.
Shema, Bernard F.; Brink, Robert H., Jr.; Swered, Paul; and Justice, Roger L., 3,824,318.

British Leyland Truck and Bus Division Limited: *See—*
Penny, Robert Noel; Parker, Peter Harry; and Silverstone, Calvin Eric, 3,824,036.

British Oxygen Company, Limited, The: *See—*
Power, Basil Dixon, 3,824,039.

Brockmuller, Friedrich Franz, to Windmoller & Holscher. Conveyor means for paper or plastics tube sections in the manufacture of bags. 3,823,811, Cl. 198-29.000.

Brockway Glass Company, Inc.: *See*—
Snyder, Herbert C., 3,823,686.

Brode, George L., to Union Carbide Corporation. Bisthioethers. 3,824,293, Cl. 260-607.00a.

Bronner, Jean Yves Rene Lucien; Mougel, Didier Jean; and Himmelbauer, Alain Jacques, to U.S. Philips Corporation. Arrangement for collecting and/or distributing information via transmission lines. 3,824,545, Cl. 340-151.000.

Bronovsky, Grigory Abramovich: *See*—
Schegolev, Gleb Stepanovich; Tsvetkov, Mikhail Alexeevich; Fasulati, Rady Kirillovich; Budnikov, Sergei Fomich; Bronovsky, Grigory Abramovich; and Granovsky, Semen Abramovich, 3,824,032.

Brookhart, J. Keith: *See*—
Holoubek, George Henry; Ales, David Edward; Harms, Harland Elmer; Erickson, Warren E.; Ditmars, Maurice A.; and Brookhart, J. Keith, 3,823,850.

Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, to Hoffmann-La Roche Inc. Intermediates for the preparation of alkyl substituted resorcinols. 3,824,272, Cl. 260-468.00j.

Brown & Root, Inc.: *See*—
Crout, Jesse W.; Koehler, Albert M.; and Shaw, Larry K., 3,823,564.

Brown, Barry M.; and Ray, Elbert L., to Eastman Kodak Company. Simplified process for manufacturing cellulose acetate reverse osmosis membranes. 3,824,299, Cl. 264-41.000.

Brown Group, Inc.: *See*—
Welsh, Ivan Eugene II; and Heckman, Ray Flow, 3,823,430.

Brown, Harold J., to Lorain Products Corporation. Regulator circuit having a clamped regulating wave. 3,824,443, Cl. 321-5.000.

Brown, Melancthon Starr, deceased (by Kohn, Gustave K., Administrator), to Chevron Research Company. 1-Carboxamidothio-3-aryl ureas. 3,824,281, Cl. 260-545.00r.

Brown, Ronald D.: *See*—
Stolin, Billy L.; and Brown, Ronald D., 3,823,928.

Brown, William R.; and Mullikin, Noel C., to Malloy, P. R., & Co., Inc. Electrical timer with improved gear-cam structure. 3,824,357, Cl. 200-38.00b.

Brownlie, Alan W.: *See*—
Infanger, Arthur W.; and Brownlie, Alan W., 3,823,617.

Broyer, Robert, to Regie Nationale des Usines Renault and Automobiles Peugeot. Steering wheels for automobile vehicles. 3,823,618, Cl. 74-552.000.

Brunel, L. E. Andre, to Microsystems International Limited. Driver circuit. 3,824,408, Cl. 307-214.000.

Bruun, Peer. Foam-tightened edge joint for structural panels. 3,823,525, Cl. 52-758.00d.

Bryan, John; and Hart, Frederick Harry, to Pilkington Brothers Limited. Welded multiple glazing units. 3,824,088, Cl. 65-40.000.

Bryers, Richard William; and Shenker, Jack David, to United States of America, Environmental Protection Agency. Fluidized bed heat exchanger. 3,823,693, Cl. 122-2.00d.

Buchanan, James B., to Du Pont de Nemours, E. I., and Company. Substituted 0 -carbamylhydroxamate insecticides. 3,824,320, Cl. 424-298.000.

Buchner, Robert Bertold, to U.S. Philips Corporation. Method of transferring information. 3,824,349, Cl. 179-15.0bs.

Buckbee-Mears Company: *See*—
Crowe, Patrick B., 3,824,176.

Buckley, Charles G.: *See*—
Bhat, Ghanshyam A.; and Buckley, Charles G., 3,823,486.

Buczek, Carl J.; Chenausky, Peter P.; and Freiberg, Robert J., to United Aircraft Corporation. Unstable ring laser resonators. 3,824,487, Cl. 331-984,50c.

Budnikov, Sergei Fomich: *See*—
Schegolev, Gleb Stepanovich; Tsvetkov, Mikhail Alexeevich; Fasulati, Rady Kirillovich; Budnikov, Sergei Fomich; Bronovsky, Grigory Abramovich; and Granovsky, Semen Abramovich, 3,824,032.

Budzinski, Roger R., to Park-Ohio Industries, Inc. Method and apparatus for hardening irregular internal surfaces. 3,823,927, Cl. 266-5.0ee.

Buell, Bruce A.: *See*—
Howe, William E.; and Buell, Bruce A., 3,824,353.

Bugaut, Andree: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,824,075.

Bugaut, Andree; and Laudon, Monique, to Societe Anonyme dite: L'Oreal. Hair dye compositions containing salts of norpholino-(2,3-b)-phenoxazonium. 3,824,074, Cl. 8-10.000.

Bujas, Roko: *See*—
Boutaine, Jean-Louis; Bujas, Roko; and Tortel, Jean, 3,824,396.

Bulten, Eric Jan, to Cosan Chemical Corporation, mesne. Preparation of monohydrocarbyl tin trihalides. 3,824,264, Cl. 260-429.700.

Bumueller, Hermann Karl. Articulated vehicle. 3,823,902, Cl. 248-2.000.

Bunker Ramo Corporation: *See*—
Dorrell, Robert Francis, 3,824,529.

Bunker-Ramo Corporation, The: *See*—
Hall, Stanley Rylon, 3,824,595.

Burch, James Morriss; Wilton, Raymond John; Reid, Colin David; and Wall, Michael Richard, to Holotron Corporation, mesne. Method of and apparatus for detecting surface form irregularities. 3,823,604, Cl. 73-71.300.

Burlington Industries, Inc.: *See*—
Butler, Vaughn H., 3,823,582.
Hinton, Everett H., Jr.; and Avery, Larry E., 3,824,125.

Burn, Joseph, to J. & H. Company. Apparatus for covering a pallet load with plastic film. 3,823,527, Cl. 53-183.000.

Burns, Richard H., to Bausch & Lomb Incorporated. Coiled spring mirror mount for optical stabilizer. 3,824,000, Cl. 350-245.000.

Buro Patent AG: *See*—
Wesener, Erich, 3,823,673.

Burris, W. Alan. Control system for liquid treatment. 3,823,728, Cl. 137-88.000.

Burroughs Corporation: *See*—
Glaser, David; and Levine, Joel M., 3,824,582.

Bury, George John, to Illinois Tool Works Inc. Alternate action switch mechanism. 3,824,362, Cl. 200-153.00j.

Butler, Vaughn H., to Burlington Industries, Inc. Assembly for both rotatably driving the suction draw-off tube and operating the slitter mechanism of a circular knitting machine. 3,823,582, Cl. 66-147.000.

Buu-Hoi, Nguyen Phuc; Lambelin, Georges; and Gillet, Claude, to Madan AG. 4-Allyloxy-3-chloro-phenylacetic acid. 3,824,277, Cl. 260-521.00a.

Buzano, Michel, to Societe Rhodiaceta. Effect voluminous yarn. 3,823,541, Cl. 57-144.000.

Bybee, Samuel M. Hook setter apparatus. 3,823,501, Cl. 43-15.000.

Cachat, John F., to Park-Ohio Industries, Inc. Apparatus for heating a viscous liquid. 3,824,364, Cl. 219-10.510.

Cairns, John Francis: *See*—
Colchester, John Edward; Cairns, John Francis; and Carey, John Gerard, 3,824,245.

Caldwell, David H.; and Barth, Edwin F., to United States of America, Environmental Protection Agency. Ammonia elimination system. 3,824,185, Cl. 210-3.000.

Campbell, Trevor G.; and Russey, James W., to Caterpillar Tractor Co. Electromagnetic bucket positioner for heavy equipment vehicles and the like. 3,823,647, Cl. 91-358.00a.

Camras, Marvin, to IIT Research Institute. Transducer system. 3,824,619, Cl. 360-36.000.

Canevari, Roger: *See*—
Regnier, Gilbert; Canevari, Roger; and Le Douarec, Jean-Claude, 3,824,249.

Canon Kabushiki Kaisha: *See*—
Murata, Minoru; Nishikawa, Tatsuo; and Hanagata, Takayoshi, 3,823,808.

Cantella, Richard C.: *See*—
Mott, Ralph Beach, Sr.; Mott, Ralph Beach, Jr.; and Cantella, Richard C., 3,823,845.

Capellman, John J.; Stultz, James C.; and Cooper, Joseph E., to PPG Industries, Inc. Hydraulic-setting bonding agent and refractory compositions made therefrom. 3,824,105, Cl. 106-64.000.

Cardiodynamics, Inc.: *See*—
Lawhorn, Richard D., 3,823,708.

Carey, John Gerard: *See*—
Colchester, John Edward; Cairns, John Francis; and Carey, John Gerard, 3,824,245.

Cariddi, John C., to Singer Company, The. Latching mechanism for knitting machine carriage. 3,823,580, Cl. 66-60.000.

Carlson, Norman R.; Haley, Paul H.; and Enns, Mark K., to Westinghouse Electric Corporation. System and method for converging iterations for loadflow solutions in a hybrid loadflow computer arrangement having transient stability analysis capability. 3,824,24, Cl. 444-1.000.

Carlson, Richard L. Flat stock cutter. 3,823,635, Cl. 83-384.000.

Carlstrom, Borge Ingmar. Fiber-reinforced plastic tubing with continuous fibers, for pressurized water conduits in the ground. 3,823,746, Cl. 138-144.000.

Carnall, Edward, Jr.; and Parsons, William F., to Eastman Kodak Company. Cadmium sulfide infrared transmitting optical elements. 3,824,301, Cl. 423-561.000.

Carpenter, Larry L., to Corning Glass Works. Method of forming light focusing fiber waveguide. 3,823,995, Cl. 350-96.0wg.

Carrier Corporation: *See*—
Alverson, Robert L.; and Morris, Howard W., 3,823,533.
Bolton, Theodore S., 3,823,574.
Duell, Richard J.; and Honnold, Fred V., Jr., 3,823,770.
Reedy, Wayne R.; and Russ, Edward F., 3,823,862.

Carrozzeria Pininfarine S.p.A.: *See*—
Fioravanti, Leonardo, 3,823,977.

Carter, Alan R.: *See*—
Harlan, James T., Jr.; Pettit, Donald; Blackwell, Frederick B.; and Carter, Alan R., 3,824,149.

Carter, John Anthony, to ICI Fibres Limited. Manufacture of high molecular weight synthetic linear polyamides. 3,824,207, Cl. 260-37.00n.

Case, J. I., Company: *See*—
Clarke, Evans L.; and Kulhavy, Joseph T., 3,823,648.
Rhodes, Keith H.; and Schlapman, William J., 3,823,435.

Cassady, Verl C. Automotive air conditioning apparatus. 3,823,573, Cl. 62-238.000.

Cassany, Jean Louis Roger: *See*—
Margala, Jean Pierre; and Cassany, Jean Louis Roger, 3,824,483.

Castledine, Buddy W.: *See*—
Weaver, Don M.; Reichman, Steven H.; and Castledine, Buddy W., 3,823,463.

Caterpillar Tractor Co.: *See*—

Boggs, Roger L.; Balzer, David John; and Haslett, Melvin, 3,823,989.
Campbell, Trevor G.; and Russey, James W., 3,823,647.

Caterpillar Tractor Company: *See—*
Moser, Raymond L., 3,823,753.
Shotwell, Daniel B., 3,823,619.
Stolin, Billy L.; and Brown, Ronald D., 3,823,928.
Winzeler, James E.; and McClure, William M., 3,823,802.

Cato Oil & Grease Co.: *See—*
Ducatillon, Jean, 3,823,797.

Celanese Corporation: *See—*
Allman, William T.; and Solmax, Gungor M., 3,823,748.
Boom, Abraham A., 3,823,489.
Boom, Abraham A., 3,824,398.
Roberts, John D., 3,823,448.
Stackman, Robert W., 3,824,213.

Cellu Products Company: *See—*
Currie, Grover C.; and Doll, Brendan L., 3,823,623.

Cenker, Moses: *See—*
Narayan, Thirumurti L.; Cenker, Moses; Kan, Peter T.; and Patton, John T., Jr., 3,824,239.
Narayan, Thirumurti L.; Cenker, Moses; Kan, Peter T.; and Patton, John T., Jr., 3,824,240.

Central Electricity Generating Board: *See—*
Noltingk, Bernard Edward; and Robinson, Norman Edgar, 3,824,391.

Centre d'Etudes Techniques des Industries de l'Habillement: *See—*
Guichard, Jean, 3,823,935.

Centre Electronique Horloger, S.A.: *See—*
Vittoz, Eric Andre; and Fonjallaz, Claude, 3,823,545.

Centreville Tag-A-Long Trailers, Inc.: *See—*
Martin, Raymond D., Jr., 3,823,962.

Centrum Techniki Okretowej, Przedsiebiorstow Panstwowe Wyodrebnione: *See—*
Wisniewski, Wladyslaw; Piotrowski, Jan; and Szeler, Zbigniew W., 3,824,045.

Chacour, Selim A., to Allis-Chalmers Corporation. Hydraulic turbine nozzle. 3,824,033, Cl. 415-151.000.

Chai, Sie Yearl: *See—*
Rees, Richard W.; and Chai, Sie Yearl, 3,824,227.

Chamecki, Samuel, to Les Joyets Rationnels. Parlour game. 3,823,943, Cl. 273-131.00a.

Champ, Robert Bruce; and Shattuck, Meredith David, to International Business Machines Corporation. Sensitive electrophotographic plates. 3,824,099, Cl. 96-1.500.

Champion International Corporation: *See—*
Vassiliades, Anthony E.; Vincent, David N.; and Shroff, Shrenik, 3,824,114.

Chance, Maynard R., to Thornhill-Craver Company. Metalliding process. 3,824,134, Cl. 148-6.000.

Chandler, Robert B., to Kilpatrick & Company. Air conditioning terminal with mixing duct. 3,823,870, Cl. 236-49.000.

Chang, Chung-Wie. Double ply welded plate tank wall construction. 3,823,842, Cl. 220-1.00b.

Chapin, Everett E., 1/2 interest to Chapin, Josephine A. Framing layout jig. 3,823,481, Cl. 33-96.000.

Chapin, Josephine A.: *See—*
Chapin, Everett E., 3,823,481.

Chapsal, Paul, to Trailigaz-Societe Industrielle du Traitement des Liquides et des Gaz. Device and apparatus for treating liquids such as drinking water and waste water. 3,823,923, Cl. 261-93.000.

Charity, Michael: *See—*
Fellows, Thomas George; Garstin, David John Ivor; and Charity, Michael, 3,823,672.

Charnley, Ralph E.: *See—*
Waselcski, Joseph W., Jr.; and Charnley, Ralph E., 3,824,579.

Charny, Abram Khaimovich: *See—*
Molochnikov, Nikolai Vladimirovich; Charny, Abram Khaimovich; and Prokhorov, Vladimir Alexandrovich, 3,823,459.

Chartet, Andre, to Societe Anonyme des Usines Chausson. Method of securing together two aluminum containing parts. 3,823,464, Cl. 29-470.500.

Chase-Shawmut Company, The: *See—*
Knapp, Edward J., Jr., 3,824,520.

Chaussy, Leon Michel: *See—*
Miyashita, Tsuneo; and Chaussy, Leon Michel, 3,823,530.

Check, Joseph M.; and Lewis, Ronald E., to Toro Company, The. Vehicle and sand-trap rake. 3,823,781, Cl. 172-192.000.

Chemetron Corporation: *See—*
Rogers, Gerald L., 3,823,906.
Wallace, Gary Leonard, 3,823,821.

Chemical Construction Corporation: *See—*
Dillon, Thomas J.; and Warshaw, Abe, 3,824,084.
Harada, Shunichi; and Karafian, Maxim, 3,824,283.

Chemische Fabrik Pfersee GmbH: *See—*
Pusch, Gunter; and Walz, Dieter, 3,824,232.

Chen, Thomas T.: *See—*
Archer, John L.; Tocci, Leonard R.; and Chen, Thomas T., 3,824,565.

Chenausky, Peter P.: *See—*
Buczek, Carl J.; Chenausky, Peter P.; and Freiberg, Robert J., 3,824,487.

Cheney, Oliver F.; and Dobo, Tamas, to Plat-General, Inc. Vacuum apparatus for handling sheets. 3,823,836, Cl. 214-16.40r.

Cherico, John R. Wheel blocking alarm and indicating system. 3,824,536, Cl. 340-52.00r.

Cherry, Peter, to Cherwell Valley Silos Limited. Method for drying moisture from wet spent coffee grounds. 3,823,487, Cl. 34-10.000.

Cherwell Valley Silos Limited: *See—*
Cherry, Peter, 3,823,487.

Chevallier, Pierre, to Etablissements Gcnound & Cie. Piezo-electric cigarette lighter. 3,824,063, Cl. 431-255.000.

Chevron Research Company: *See—*
Brown, Melancthon Starr, deceased, 3,824,281.
Fries, Bernard A.; and Parker, Charles K., 3,824,395.

Chirana Zavody Zdravotnickej technicky Odborovy podnik: *See—*
Holanek, Stanislay; and Stolpa, Karel, 3,823,715.

Chiu, Ying C., to Shell Oil Company. Digested alkaline tall oil pitch soap composition. 3,823,774, Cl. 166-252.000.

Chown, Peter Charles: *See—*
Bretten, David Charles; and Chown, Peter Charles, 3,823,815.

Christensen, Roy Martin; Gibson, James John; and Limberg, Allen Le Roy, to RCA Corporation. Omnidirectional sound field reproducing system. 3,824,342, Cl. 179-1.0gq.

Christian, Warren E., to Norton Company. Motion imparting member incorporating holding means for nonwoven fibrous abrasive pads. 3,823,516, Cl. 51-358.000.

Chun, Sun W.; and Montagna, Angelo A., to Gulf Research & Development Company. Acid member reduction of hydrocarbon fractions using a solid catalyst and NH_3. 3,824,183, Cl. 208-263.000.

Chung, Daniel A., to Goodyear Tire & Rubber Company, The. Polyureaurethane shock absorbing unit. 3,823,833, Cl. 213-40.00r.

Ciba-Geigy Corporation: *See—*
Franke, Albrecht; and Traber, Walter, 3,824,274.
Kirchmayr, Rudolf; Peterli, Hans Jakob; and Heller, Hansjorg, 3,824,273.
Kuhne, Manfred; and Vogel, Christian, 3,824,093.
Mizzoni, Renat Herbert; and Blatter, Herbert Morton, 3,824,241.
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Ciba-Geigy Limited: *See—*
Oswald, Richard Alan; and Stark, Bernard Peter, 3,824,259.

Cichetti, Michael Peter, Jr., to Bell Telephone Laboratories, Incorporated. Digital data interchange circuit for a multiplexer/demultiplexer. 3,824,543, Cl. 340-147.0cn.

Cichos, Manfred: *See—*
Pohlman, Reimar; and Cichos, Manfred, 3,823,717.

Cie Societe Francaise de Recherche: *See—*
Regnier, Gilbert; Canevari, Roger; and Le Douarec, Jean-Claude, 3,824,249.

Cincinnati Milacron Inc.: *See—*
Wiebe, Harold Dean, 3,824,438.

Clark, Robert P.: *See—*
Dokter, Henry J.; and Clark, Robert P., 3,823,823.

Clarke, Evans L.; and Kulhavy, Joseph T., to Case, J. I., Company. Fluid cylinder unit cushion structure. 3,823,648, Cl. 91-395.000.

Clinton, William P.: *See—*
Parliment, Thomas H.; Epstein, Martin P.; Clinton, William P.; Scarpellino, Richard; and Soakup, Robert J., 3,824,321.

Clobes, Arnold R.: *See—*
Brienza, Michael J.; and Clobes, Arnold R., 3,824,492.

Clock, Donald Page: *See—*
Johnson, Miles Carrington; and Clock, Donald Page, 3,824,450.

Close, Sam. Portable drinking water purifier. 3,823,824, Cl. 210-86.000.

Cloud, Kenneth C.: *See—*
Sandstrom, John W.; and Cloud, Kenneth C., 3,823,730.

Clover, Richmond B., Jr.; and Waites, Robert F., to Hewlett-Packard Company. Magnetic bubble generation. 3,824,571, Cl. 340-174.0tf.

Cluckey, Bertha L. Protective garment. 3,823,417, Cl. 2-91.000.

Coats & Clark, Inc.: *See—*
Labecki, Karl W., 3,823,446.

Coats, Robert Reid; and Greenway, John Michael, to Imperial Chemical Industries Limited. Apparatus for stringing a thread through a hole. 3,823,631, Cl. 83-100.000.

Cobb, Roy L. Portable pole. 3,823,832, Cl. 211-119.010.

Cochran, Ronald; Federle, August J.; and Marsh, Samuel W., III, to Owens-Illinois, Inc. Pushup gauge. 3,823,822, Cl. 209-80.000.

Cochran, Thomas L., Jr., to American Air Filter Company, Inc. Freeze protection device in heat pump system. 3,823,572, Cl. 62-160.000.

Coes, Loring, Jr., to Norton Company. Method and means of grinding with electrophorctic assistance. 3,823,515, Cl. 51-322.000.

Coffin, Leon B.: *See—*
Lawrence, Willis G.; and Coffin, Leon B., 3,824,112.

Coffman, Rudleigh G. Toilet tank discharge control for selectively discharging variable amounts of water. 3,823,425, Cl. 4-53.000.

Coia, Pasco A., to General Signal Corporation. Analog-digital converter circuit. 3,824,584, Cl. 340-347.0ad.

Coil, Frederick J. Chain accessory tools. 3,823,914, Cl. 254-78.000.

Coilcraft, Inc.: *See—*
Hojnacki, Donald G., 3,824,514.

Colbath, Dan L. Roll-forming machine. 3,823,592, Cl. 72-181.000.

Colchester, John Edward; Cairns, John Francis; and Carey, John Gerard, to Imperial Chemical Industries Limited. Manufacture of bipyridylium salts and related compounds. 3,824,245, Cl. 260-295.0am.

Cole, Edward N., to General Motors Corporation. Internal combustion engine and method of operation for exhaust emission control. 3,823,555, Cl. 60-274.000.
Colgate-Palmolive Company: *See—*
Henry, Marcel; and Malatray, Andre, 3,823,809.
Colletti, John B.; and Zukowski, Leonard J., to TRW Inc. Universal joint for vehicle steering column. 3,823,576, Cl. 64-8.000.
Collins, Walter Wells, to Adventure Products, Inc. Apparel belt. 3,823,421, Cl. 2-321.000.
Colt Industries Operating Corporation: *See—*
Mello, William R., 3,823,644.
Combustion Engineering, Inc.: *See—*
Cooper, Thomas Henry; and Heil, Fred Bowman, Jr., 3,823,532.
Polsak, Edwin Mark, 3,823,677.
Combustion Unlimited, Incorporated: *See—*
Straitz, John F., III, 3,824,073.
Commissariat a l'Energie Atomique: *See—*
Boutaine, Jean-Louis; Bujas, Roko; and Tortel, Jean, 3,824,396.
Compagnie Francaise de Raffinage: *See—*
Wey, Raymond; Guisen, Pierre; and Le Dred, Ronan, 3,824,191.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
Fabri, Jean; Friberg, Jean; and Siestrunck, Raymond, 3,824,029.
Compump Systems, Inc.: *See—*
Aronson, David, 3,824,040.
Concord Computing Corporation: *See—*
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Conklin, Thomas: *See—*
Richison, Eugene M.; and Richison, Ethel M., 3,823,790.
Consolidated Educational Publishing, Inc.: *See—*
Ross, William C., 3,823,633.
Constructions Electrotechniques du Centre: *See—*
Hess, Jean-Marc; and Knop, Adolph, 3,824,517.
Continental Oil Company: *See—*
Gordon, Ronnie D., 3,824,295.
Haworth, Gordon R.; Edmond, Tibor O.; and Poundstone, William N., 3,823,787.
McMullan, Jeffrey S., 3,823,739.
Parsons, Roger C.; and Yang, Kang, 3,823,775.
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Control Data Corporation: *See—*
Van Houwelingen, Jan; Van Osch, Gerardus Wouter Serge; and Weelink, Anton Maarten Herman, 3,824,171.
Van Osch, Gerardus Wouter Serge; Van Houwelingen, Jan; and Weelink, Anton Maarten Herman, 3,824,169.
Weelink, Anton Maarten Herman; Van Osch, Gerardus Wouter Serge; and Van Houwelingen, Jan, 3,824,170.
Controulis, John; Larsen, Kenneth N.; and Wheeler, Larry M., to Parke, David & Company. Water-soluble package. 3,823,816, Cl. 206-.500.
Conwicke, Joel Alfred, to Du Pont de Nemours, E. I., and Company. Disc Capacitor silver compositions. 3,824,127, Cl. 117-227.000.
Cook, Edward H., Jr.: *See—*
Schultz, Robert F.; and Cook, Edward H., Jr., 3,824,174.
Schultz, Robert F.; and Cook, Edward H., Jr., 3,824,175.
Cook, George H.; and Baldi, Alfonso L. Continuous diffusion coating. 3,824,122, Cl. 117-107.20p.
Cook, Webster Warren; and Maitland, James A. Method of reducing sulphur dioxide emissions from coal. 3,823,676, Cl. 110-1.00j.
Cooper, Gene W. Motorcycle trailer and camper. 3,823,975, Cl. 296-23.00r.
Cooper, Gordon Davis: *See—*
Bloomfield, Francis Richard; and Cooper, Gordon Davis, 3,823,760.
Cooper, Herbert: *See—*
Brenner, William; and Cooper, Herbert, 3,823,970.
Cooper, Joseph E.: *See—*
Capellman, John J.; Stultz, James C.; and Cooper, Joseph E., 3,824,105.
Cooper, Ronald Charles; and Aldridge, Alan Albert, to Ilford Limited. Method of splicing of web material. 3,824,143, Cl. 156-157.000.
Cooper, Thomas Henry; and Heil, Fred Bowman, Jr., to Combustion Engineering, Inc. Filter. 3,823,532, Cl. 55-357.000.
Coors, Adolph, Company: *See—*
Schuster, Martin E.; and Le Penske, Frederick J., III, 3,823,848.
Cops, Michael Herbert: *See—*
Ironside, John Michael; Hodgson, Duncan Barry; Cops, Michael Herbert; and Williams, Malcolm, 3,824,574.
Corbett, James C. Slide-in camper unit. 3,823,992, Cl. 312-201.000.
Cordova, Elmer. Aircraft hanger. 3,823,519, Cl. 52-65.000.
Corini, Louis J., to Melbro Corporation. Thermoelectric-vacuum shipping container. 3,823,567, Cl. 62-3.000.
Cornet, Jean; and Rossier, Dominique, to U.S. Philips Corporation. Method of manufacturing a solid semiconductor glass. 3,824,087, Cl. 65-32.000.
Corning Glass Works: *See—*
Adams, Paul B.; Justice, Benjamin; and Marusak, Francis J., 3,824,106.
Carpenter, Larry L., 3,823,995.
Griest, Edward M., 3,824,100.
Cosan Chemical Corporation, mesne: *See—*
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Coster Tecnologie Speciali S.p.A.: *See—*
Ruscitti, Tomaso, 3,823,849.
Costruzioni Meccaniche Industriali Genovesi C.M.I. S.p.A.: *See—*
Zinno, Oscar, 3,823,930.
Cotton, Curran D., to Maytag Company, The. Grounded control circuit. 3,824,476, Cl. 328-4.000.
Cotton, Curran D., to Maytag Company, The. Ground sensitive control for electrical apparatus. 3,824,477, Cl. 328-4.000.
Countryman, James H., to Dybvig, Roger S. Reel assembly. 3,823,502, Cl. 43-20.000.
Couture, John W., to Automation Industries, Inc. Ultrasonic inspection apparatus. 3,823,603, Cl. 73-67.900.
Cowpland, Michael C. J., to Microsystems International Limited. Audio frequency automatic gain control circuit. 3,824,345, Cl. 179-1.0vl.
Cox, Richard E.: *See—*
Konik, Edward H.; Drozd, Stanley C.; Small, Charles W.; Stuart, Robert W.; Cox, Richard E.; and Dery, William R., 3,823,490.
Crane, Glen Robert: *See—*
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Crane, Robert Jr., to Perkin-Elmer Corporation, The. Coherent light source detector. 3,824,018, Cl. 356-112.000.
Crawley, James A. Gas cleaner. 3,823,531, Cl. 55-233.000.
Creative Concepts Corporation: *See—*
Rosenberg, Arthur, 3,824,001.
Crete Guerin, Adolphe. Compact ground preparing roller. 3,823,780, Cl. 172-150.000.
Cronin, David V.: *See—*
Land, Edwin H.; and Cronin, David V., 3,824,611.
Crout, Jesse W.; Koehler, Albert M.; and Shaw, Larry K., to Brown & Root, Inc. Method and apparatus for transporting and launching an off shore tower. 3,823,564, Cl. 61-46.500.
Crow, Jack E.: *See—*
Strongin, Myron; Saxena, Anand M.; and Crow, Jack E., 3,824,457.
Crowe, Patrick B., to Buckbee-Mears Company. Matrix Holder. 3,824,176, Cl. 204-297.00r.
Crozier, Arthur La Verne. Staircase mold assembly. 3,823,910, Cl. 249-14.000.
Cugini, John C. Hydrocarbon cracking system. 3,824,388, Cl. 235-151.120.
Cummings, Clinton M., to Acme United Corporation. Finger operated forcep type surgical instruments. 3,823,719, Cl. 128-322.000.
Currey, Norman S., to Lockheed Aircraft Corporation. Actuation system for angularly positioning aircraft landing gear wheels. 3,823,899, Cl. 244-103.00w.
Currie, Grover C.; and Doll, Brendan L., to Cellu Products Company. Slitting roll and method of fabricating same. 3,823,623, Cl. 76-101.00a.
Curry, John Downing, to Procter & Gamble Company, The. Method of controlling bacterial, yeast and fungal species with phenyllismerth bis (2-pyridinethiol 1-oxide). 3,824,307, Cl. 424-245.000.
Curtiss-Wright Corporation: *See—*
De Feo, Angelo, 3,824,030.
Cushing, Charles R.; Henderson, Stephen Phelps; and Wells, Paul Steven, to Inter-Hull. Barge carrying transport vessel. 3,823,681, Cl. 114-43.500.
Cutler-Hammer, Inc.: *See—*
Kolb, Arthur F.; and Gilmore, John J., 3,824,510.
Risberg, Robert L., 3,824,407.
Spink, Robert w., 3,824,444.
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Dahl, William R.: *See—*
Bates, Roy G.; and Dahl, William R., 3,824,603.
Dahlquist, Jon G. Multiple driver dynamic loud speaker. 3,824,343, Cl. 179-1.00e.
Daicel Ltd.: *See—*
Uematsu, Eiji; Ishii, Kunio; Machara, Masayuki; Takahashi, Hiroshi; and Tsuji, Keiichiro, 3,824,253.
Daido Seiko Kabushiki Kaisha: *See—*
Asada, Chiaki; and Watanabe, Toshiyuki, 3,824,096.
Daikin Kogyo Kabushiki Kaisha: *See—*
Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Takahisa, Kato; Nagai, Masayoki; and Iwatani, Akitoshi, 3,824,126.
Daimler-Benz AG: *See—*
Barenyi, Bela, 3,823,968.
Damiron, Paul. Mufflers for internal combustion engines. 3,823,796, Cl. 181-49.000.
Danjczek, William E.; Leuenberger, Jean Pierre; Micale, Fortunato J.; and Wagner, Ralph W., to Koh-I-Noor Rapidograph, Inc. Venting device for stylographic pens. 3,824,023, Cl. 401-248.000.
Dart Industries Inc.: *See—*
Holoubek, George Henry; Ales, David Edward; Harms, Harland Elmer; Erickson, Warren E.; Ditmars, Maurice A.; and Brookhart, J. Keith, 3,823,850.
D'Asaro, Lucian Arthur; Dyment, John Cameron; Kuhn, Matthew; and Spitzer, Stuart Marshall, to Bell Telephone Laboratories, Incorporated. Fabrication of electrically insulating regions in optical devices by proton bombardment. 3,824,133, Cl. 148-1.500.
Data Transmission Company: *See—*
Berg, Edward A., 3,824,597.
Date, Kazou H., to McGraw-Edison Company. Vacuum loadbreak switch. 3,824,359, Cl. 200-146.00r.
Daugirda, Paul G.; and Smith, Leslie D., to Rheem International, Inc., mesne. Power burner application to fin tube heat exchanger. 3,823,704, Cl. 126-392.000.

Davalillo, Jose Luis Almendro, to Fabrica Espanola Magnetos, S.A. Capacitive discharge ignition system. 3,824,429, Cl. 315-209.00r.

David, Guy Albert Jules: *See—*
Olier, Claude; and David, Guy Albert Jules, 3,824,466.

Davidge, Roger William; and Evans, Anthony Glyn, to United Kingdom Atomic Energy Authority. Silicon nitride artefacts. 3,824,120, Cl. 117-98.000.

Davidson, William E., to General Electric Company. Self cleaning steam iron. 3,823,498, Cl. 38-77.830.

Davis Instrument Manufacturing Co., Inc.: *See—*
Rudow, Maurice G.; and Klawans, Warren D., 3,823,611.

Davis, Merlin. Blood flow diagnostic method. 3,823,706, Cl. 128-2.05f.

Davis, Robert A.: *See—*
Rod, Trygve R.; Ernst, Richard J.; and Davis, Robert A., 3,823,634.

Davis, Roderick W., Sr., to Den-Tal-Ez Mfg. Co. Dental chair. 3,823,979, Cl. 297-330.000.

Davis, Wilbur M.; and Yates, Robert E., to International Business Machines Corporation. Label printing machine. 3,823,665, Cl. 101-66.000.

Davis, William P., to Med-Lab Computer Services, Inc. Controlling flow of medical fluids. 3,823,724, Cl. 137-15.000.

Davydov, Jury Lvovich: *See—*
Glushko, Mikhail Fedorovich; Skalatsky, Viktor Klimentievich; Anastasiadi, Emmanuil Filippovich; and Davydov, Jury Lvovich, 3,823,543.

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De Bot, Laurentius Antonius Peter Maria, to U.S. Philips Corporation. Magneto-optical transducer using bubble domains. 3,824,570, Cl. 340-174.0yc.

De Feo, Angelo, to Curtiss-Wright Corporation. Diaphragm and labyrinth seal assembly for gas turbines. 3,824,030, Cl. 415-136.000.

de Gaudemaris, Gabriel: *See—*
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De Graaf, Wilhelmus Polycarpus; and Baars, Jacob Dirk, to U.S. Philips Corporation. Method of making combustion flash bulb. 3,823,994, Cl. 316-26.000.

De Laval Turbine, Inc.: *See—*
Pedersen, Haakon O., 3,823,950.

De Rivas, Eduardo Villasenor, to Rene Villasenor de Rivas. Contact potential generator system. 3,824,448, Cl. 322-2.000.

De Schulthess, Robin F., to Bobtex Corporation Limited, The. Apparatus for continuously winding filamentary material. 3,823,885, Cl. 242-18.00a.

Deere & Company: *See—*
Ring, Curtis Phillip; and Hunck, Billie Gene, 3,823,650.

Deering Milliken Research Corporation: *See—*
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Deibert, Max C., to Anacon, Inc. Trace gas analyzer. 3,824,166, Cl. 204-195.00r.

Demarcq, Michel; and Petitjean, Raymond, to Produits Chimiques Ugine Kuhlmann. Method for stabilizing elastomers and the elastomers which are produced according to this method. 3,824,205, Cl. 260-29.70p.

Dembiak, Matthew R.; and Webster, George H., said Dembiak assor. to Western Electric Company Incorporated and said Webster assor. to Bell Telephone Laboratories, Incorporated. Tubular member having a sealed longitudinal seam. 3,823,747, Cl. 138-141.000.

Den-Tal-Ez Mfg. Co.: *See—*
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Denouter, Pieter J.: *See—*
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Derbes, Gerald J.: *See—*
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Derks, Leendert L. J.; and Koster, Olav E., to Akzona Incorporated. Shaft seal. 3,823,949, Cl. .

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Derzhavets, Abram Yakovlevich; Kogan, Petr Grigorievich; Semenov, Vladimir Nikolaevich; and Tabachnikov, Viktor Iosifovich. Propelling arrangement for oil and garbage skimmer craft. 3,823,828, Cl. 210-242.000.

Des Jardins, John Melvin: *See—*
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DeYoung, James H.: *See—*
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Diamond, Herrick R., to SCM Corporation. Counterbalance touch control. 3,823,806, Cl. 197-33.000.

Dibattista, Anthony Dominic; and Spivack, John Denon. Stabilized system containing metal hydroxyalkyl phosphonic acid or phosphinic acid. 3,824,192, Cl. 252-400.00a.

Diehl: *See—*
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Dietrich, Werner; Wagner, Kuno; Richert, Karl Hartwig; Kleimann, Helmut; Konig, Christian; and Meckel, Walter, to Bayer Aktiengesellschaft. Polyisocyanates which contain biuret groups. 3,824,266, Cl. 260-453.0ab.

Dietz, Gerardus, to U. S. Philips Corporation. Developing device for electrostatic charge images. 3,823,689, Cl. 118-637.000.

Dillon, Thomas J.; and Warshaw, Abe, to Chemical Construction Corporation. Production of low sulfur coal. 3,824,084, Cl. 44-1.00r.

Dinkloh, Walter; and Spennemann, Wilhelm, to Linde Aktiengesellschaft. Vehicle with stepless drive and auxiliary braking force. 3,823,792, Cl. 180-82.000.

Disk Systems Corporation: *See—*
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D'Luhy, Emil A.; and Wakeman, William R., to Moore Business Forms, Inc. Envelope assembly. 3,823,867, Cl. 229-69.000.

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Dohring, Hans M. Garment hanger. 3,823,855, Cl. 223-96.000.

Doi, Yoshikazu; and Kishikawa, Toshio, to Fuji Shashin Koki Kabushiki Kaisha. Color separation prism for television camera. 3,824,004, Cl. 350-173.000.

Dokter, Henry J.; and Clark, Robert P., to Means, F. W., & Company. Cleaning system and method. 3,823,823, Cl. 210-79.000.

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Dornier Systems GmbH: *See—*
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Dorrell, Robert Francis, to Bunker Ramo Corporation. Flat cable connector. 3,824,529, Cl. 339-99.000.

Dosch, Mathew L. Humane animal trap. 3,823,504, Cl. 43-61.000.

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Dover Corporation: *See—*
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Dow Corning Corporation: *See—*
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Doyle, William C., Jr.; and Hedrich, Loren E., to Gulf Research & Development Company. 2-(1,3,3-Trimethylurcido)-1,3,4-thiadiazole-5-n, n-dimethylsulfonamide. 3,824,247, Cl. 260-306.80d.

Dragoco Spezialfabrik Konz, Riech-und Aromastoffe Gerberding & Co. GmbH: *See—*
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Feaucht, Jacob Edward, 3,823,784.

Drozd, Stanley C.: *See—*
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Druge, Gerard; and Valentini, Claude, to Societe Nouvelle de Roulements. Devices for handling workpieces by means of centerless holders. 3,823,810, Cl. 198-26.000.

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Conwicke, Joel Alfred, 3,824,127.
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DuBois, Chester; and Hunt, Paul R., to Outboard Marine Corporation. Diaphragm valve. 3,823,733, Cl. 137-496.000.

Ducatillon, Jean, to Cato Oil & Grease Co. Apparatus for the application of a fluid pasty material on a wire shaped element. 3,823,797, Cl. 184-16.000.

Duck, Sherman W.: *See—*
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Dudkowski, Stanley J.: *See—*
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Duell, Richard J.; and Honnold, Fred V., Jr., to Carrier Corporation. Heat exchange assembly. 3,823,770, Cl. 165-76.000.

Duncan, Alfred D., to Duncanlite Laboratory, Inc. Interconnected hoops and targets. 3,823,942, Cl. 273-100.000.

Duncanlite Laboratory, Inc.: *See—*
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Dunlop Holdings Limited: *See—*
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McGlashen, James N., 3,823,687.

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Dunn, Garf L., to Dunn Tool Company. Multi-probe hole-location and concentricity-measuring spindle for dial indicator gauge. 3,823,484, Cl. 33-174.00q.
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Dybvig, Roger S.: *See—*
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Dyment, John Cameron: *See—*
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Smith, Homer A., Jr., 3,824,008.
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Williams, James E.; and Fleischer, Jean C., 3,824,193.
Eastmond, Bruce C., to Motorola, Inc. Communications system and method for transmitting over a limited bandwidth transmission link. 3,824,470, Cl. 325-45.000.
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Eaton Corporation, mesne: *See—*
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Eaton, Milton. Low voltage electric boilers. 3,824,372, Cl. 219-287.000.
Eckert, Hans Werner; and Nikolaus, Peter, to Henkel & Cie GmbH. Oligopeptide derivatives and process for the preparation thereof using glycidyl esters of carboxylic acids to react with protein-diamine aminolyzates. 3,824,228, Cl. 260-117.000.
Economic Development Corporation: *See—*
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Economics Laboratory, Inc.: *See—*
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Edwards, Joseph L.; Penland, William D.; and Warren, James B., to Square D Company. Calibratable pressure switch with adjustment means. 3,824,358, Cl. 200-83.00s.
Edwards, Rebecca M.: *See—*
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Egan, Daniel J., to Londat Actz Fabric Co. Alkali soluble rayon textile material and process for producing same. 3,824,078, Cl. 8-120.000.
Eickmann, Karl. Hydraulically controlled fluidstream-driven aircraft. 3,823,898, Cl. 244-55.000.
Eisenberg, Alvin S., to Q-TV, Inc. Prompting device for lecturers and television announcers. 3,824,339, Cl. 178-7.810.
Eklund, Phillip R., to United States of America, Air Force. Unbonded flexure seal design. 3,823,951, Cl. 277-208.000.
Elder, George; and Lehnhoff, Hans F., to Schlage Lock Company. Method of producing lock key blanks. 3,823,596, Cl. 72-324.000.
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Ellis, Vincent Simon, to Imperial Chemical Industries Limited. Process for bonded fibrous structure and product thereof. 3,824,146, Cl. 161-150.000.
Elsby, Ian Eric. Valve. 3,823,732, Cl. 137-436.000.
Elward, John R.; and Inglis, Stanley B., to Fibreboard Corporation. Tear strip arrangement for containers. 3,823,866, Cl. 229-51.0ts.
Emberson, John Ernest. Pipe joint. 3,823,965, Cl. 285-174.000.
Energetics Science, Inc.: *See—*
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Oswin, Harry G.; and Blurton, Keith F., 3,824,168.
Engel, F. William; Engel, Robert S.; Derbes, Gerald J.; and Dusseau, M. Walter. Portable radio/tape recorder charging and locking system. 3,824,472, Cl. 325-355.000.
Engel, Robert S.: *See—*
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Eshraghian, Kamran, to U.S. Philips Corporation. Sequential switching device. 3,824,480, Cl. 328-75.000.
Esser, Wilhelm Cornelis Johannes, to AMP Incorporated, mesne. Connector for coaxial cable. 3,824,528, Cl. 339-97.00c.
Esso Research and Engineering Company: *See—*
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Gorsich, Richard D., 3,824,265.
Etter, Peter; and Hengsberger, Jurgen, to BBC Brown Boveri & Company Limited and Allgemeine Elektricitaets-Gesellschaft AEG-Telefunken. Choke arranement for limiting switch-in current flow through thyristor valves of high-voltage converter circuit. 3,824,45, Cl. 321-11.000.
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Davidge, Roger William; and Evans, Anthony Glyn, 3,824,120.
Evans, William Robert, to AMP Incorporated. Wire-in-slot electrical connections. 3,824,527, Cl. 339-97.00r.
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Fabri, Jean; Friberg, Jean; and Siestrunck, Raymond, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Centrifugal supersonic compressor. 3,824,029, Cl. 415-109.000.
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Faille, Harold E., to Guilford Mills, Inc. Beam shafting apparatus. 3,823,451, Cl. 28-41.000.
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Farley, Larry, to Narad, Inc. Ceiling supported load spacer. 3,823,675, Cl. 105-369.00b.
Farmos, George T. Drafting device. 3,823,478, Cl. 33-30.00e.
Farrell, Robert E., to Improved Machinery Inc. Track-type molding apparatus and carriage means therefor. 3,824,062, Cl. 425-451.000.
Fasulati, Rady Kirillovich: *See*—
Schegolev, Gleb Stepanovich; Tsvetkov, Mikhail Alexeevich; Fasulati, Rady Kirillovich; Budnikov, Sergei Fomich; Bronovsky, Grigory Abramovich; and Granovsky, Semen Abramovich, 3,824,032.
Fava, Ermenegildo; and Sibilia, Ermanno, to Oce-vander Grinten N.V. Endless belt aligning system. 3,823,614, Cl. 74-241.000.
Feaucht, Jacob Edward, to Dresser Industries, Inc. Method and apparatus for controlling hydraulic drifters. 3,823,784, Cl. 173-1.000.
Federal-Mogul Corporation: *See*—
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Fehlner, Francis P. Active thin film device based on crossed discontinuous thin films and method. 3,824,436, Cl. 317-234.00r.
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Fellows, Thomas George; Garstin, David John Ivor; and Charity, Michael, to Tracked Hovercraft Limited. High speed ground transportation systems. 3,823,672, Cl. 104-148.0ms.
Fencl, Vernon R.; Roze, Albert; and Naureckas, Edward M., to Grotnes Machine Works, Inc. Apparatus for wrapping pipe with multiple strips. 3,823,883, Cl. 242-7.230.
Fennell, John Richard: *See*—
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Fergusson, Ian Douglas: *See*—
Barnes, Edward; and Fergusson, Ian Douglas, 3,824,042.
Ferranti Limited: *See*—
Grundy, David Latham, 3,824,559.
Ferrara, Rose S. Easy-on bands for rolled meats. 3,823,442, Cl. 24-16.00r.
Feucht, Alfred; and Guidi, Vincenco, to BBC Aktiengesellschaft Brown, Boveri & Cie. Apparatus for producing arcuate grooves in a cylindrical member. 3,823,643, Cl. 90-15.00a.
Fiat Societa per Azioni: *See*—
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Fiddler, Theodore E.; and Adams, Arnold G. (said Adams assor. to said), 3,824,356.
Fiddler, Theodore E.; and Adams, Arnold G., said Adams assor. to said Fiddler, Theodore E. Actuator for electro-motive force and fluid pressure force. 3,824,356, Cl. 200-61.860.
Fikuda, Ryuhei: *See*—
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Finger, John F., to Sioux Steam Cleaner Corporation. Air conditioning apparatus. 3,823,768, Cl. 165-48.000.
Finkelstein, Morris Baer, to RCA Corporation. Recording web tension control. 3,823,896, Cl. 242-191.000.
Fioravanti, Leonardo, to Carrozzeria Pininfarine S.p.A. Motor vehicle bodywork with rigid sunshine roof. 3,823,977, Cl. 296-137.00b.
Fiorella, John J. Flavored stitter for alcoholic beverages. 3,824,322, Cl. 426-134.000.
Fischer, Robert Frederick; Schmidt, Paul Herman; and Spencer, Edward Guerrant, to Bell Telephone Laboratories, Incorporated. Single wall domain propagation arrangement. 3,824,568, Cl. 340-174.0tf.
Fisher, William J., 1/2% to Braverman, Maynard. Machine for processing flexible metallic conduit. 3,823,454, Cl. 29-33.00k.
Fitzgerald, Thomas; and Edwards, Rebecca M., to Singer Company, The, mesne. Information segregation apparatus. 3,823,963, Cl. 283-66.000.
Flax, Valar, to Continentalplastic AG. Apparatus for bonding a thermoplastic tubular part to the periphery of a thermoplastic tube head. 3,824,145, Cl. 156-580.000.
Fleigle, Donald Earl, to Black and Decker Manufacturing Company, The. Air tool muffler. 3,823,795, Cl. 181-36.00a.
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Fliesser, Engelbert; Pustka, Karel; and Wagensonner, Eduard, to Agfa-Gevaert Aktiengesellschaft. Illumination control arrangement for photographic camera. 3,824,605, Cl. 354-42.000.
Focella, Antonino: *See*—
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Foret, Claude H. Heat exchanging apparatus. 3,823,559, Cl. 60-508.000.
Forgett, Valmore J. Jr., to Adventure Products Inc. Apparel belt and buckle therefor. 3,823,422, Cl. 2-321.000.
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Forster, Johannes; Bezold, Karl-Heinz; and Vitt, Gerhard, to Licentia Patent-Verwaltungs-GmbH. Controlled rectifier. 3,824,446, Cl. 321-12.000.
Fortenbach, Robert W.: *See*—
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Fortune, William S. Raw material feeder system. 3,823,628, Cl. 82-2.700.
Fowler, James E., to Deering Milliken Research Corporation. Apparatus to produce nonwoven fabric. 3,824,052, Cl. 425-83.000.
Fowler, John T., to Laitram Corporation, The, mesne. Dual mode angle encoder. 3,824,587, Cl. 340-347.00p.
Fox, Ralph W., to Philco-Ford Corporation. Document restraining and reading apparatus. 3,824,376, Cl. 235-61.11j.
Franke, Albrecht; and Traber, Walter, to Ciba-Geigy Corporation. Esters of phenoxyphenylalkenoic acids. 3,824,274, Cl. 260-473.00r.
Frederick, John E.; and Peterson, Howard H., to Anaconda Company, The. Strand package. 3,823,894, Cl. 242-137.100.
Freeman, Michael Walter. Segmental dies. 3,823,598, Cl. 72-467.000.
Freeman, Raymond; and Hill, Howard D. W., to Varian Associates. Pulse modulated fourier transform magnetic resonance spectrometer utilizing quadrature phase detection and high pass filter to eliminate undesired strong resonance lines. 3,824,451, Cl. 324--.0r.
Freeman, Raymond; and Hill, Howard D. W., to Varian Associates. Fourier transform nuclear magnetic resonance spectrometer employing means for generating random pulse intervals to avoid anomalies due to net transverse magnetization. 3,824,452, Cl. 324-.50r.
Freiberg, Robert J.: *See*—
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French, Richard Charles, to U.S. Philips Corporation. Privacy transmission system. 3,824,467, Cl. 325-32.000.
Frenkel, Mark Isaakovich. Uniflow valve. 3,823,735, Cl. 137-512.150.
Frenzl, Otto, to Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation. Nozzle for use in hot liquid ejector pumps, and related process. 3,823,872, Cl. 239-8.000.
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Friedrich Maurer Soehne, Firma: *See*—
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Fries, Bernard A.; and Parker, Charles K., to Chevron Research Company. Radiometric assay of particulate matter in fluids. 3,824,395, Cl. 250-308.000.
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Fry, Arthur Francis, to Applied Chemicals Pty. Ltd. Foaming system and improved foaming device. 3,823,727, Cl. 137-88.000.
Fry, Douglas James; and Keogh, Patrick Joseph, to Ilford Limited. Production of selenium compounds. 3,824,282, Cl. 260-551.00r.
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Fujiwara, Hisao; and Sakamoto, Kentaro, to Kabushiki Kaisha Keiaisha Seisakusho. Buffer device used for industrial robot machine. 3,823,800, Cl. 188-303.000.
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Fuller, Maurice D., to Korry Manufacturing Company. Interchangeably structured electrical cartridge with cross-biased latch mechanism for the releasably tethered cap of the same. 3,824,363, Cl. 200-328.000.
Funaki, Hidefumi; Tanaka, Toshiaki; Nakajima, Katsuyoshi; and Kanda, Yuichi, to Nippon Electric Varian, Ltd. Frequency to voltage converter with means for prescribing pulse width against fluctuations. 3,824,410, Cl. 307-233.000.
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Fussell, Theodore John, Jr., to Eastech, Inc. Bluff body flowmeter utilizing a moveable shutter ball responsive to vortex shedding. 3,823,610, Cl. 73-194.00b.
Galantay, Eugene E., to Sandoz-Wander, Inc. 1,6- Disubstituted pyrocatechol derivatives. 3,824,278, Cl. 260-521.00r.
Galyon, George Tipton, to International Business Machines Corporation. Method of determining the thickness of contiguous thin films on a substrate. 3,824,017, Cl. 356-108.000.
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Garland, Thomas H.; Duck, Sherman W.; Jeffers, Frederick J.; and McClure, Richard J., to Bell & Howell Company. Multi-color magnetic image recording and media. 3,824,601, Cl. 346-74.100.
Garner, Lloyd L., to Smith International, Inc. Drill bit center jet. 3,823,789, Cl. 175-340.000.
Garnier, Andre, to Vallourec Usines a Tubes de Lorraine-Escaut et Vallourec Reunies. Process and apparatus for annealing the weld bead of a welded metallic tube. 3,824,366, Cl. 219-10.770.
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Garst, John M., to Owens-Corning Fiberglas Corporation. Method and apparatus for control of conditions in a process. 3,824,387, Cl. 235-151.100.
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Gaskins, Thomas. Cutting lead tips for drill bits. 3,824,026, Cl. 408-210.000.
Gehring, Christoph W., to Maschinenfabrik Gehring KG. Measuring device for surfaces to be machined on machine tools. 3,823,511, Cl. 51-34.00r.
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Gerstien, David E. Device for forming lightweight paper into rolls without any core. 3,823,887, Cl. 242-56.200.
Gerum Erich, to Diehl. Crystal oscillator, especially for clocks and watches. 3,824,495, Cl. 331-116.00r.
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Gilbert, Howard E. Adjustable frame. 3,823,499, Cl. 40-155.000.
Gilbert, Kenneth E., to United States of America, Army. Etching of aluminum fluidic devices. 3,824,136, Cl. 156-8.000.
Gilbert, Ronald Albert, to Rolls-Royce (1971) Limited. Turbine casing for a gas turbine engine. 3,824,031, Cl. 415-135.000.
Gilinson, Philip J., Jr., to Massachusetts Institute of Technology. Capacitive-inductive bridge type electrical suspension. 3,823,990, Cl. 308-10.000.
Gill, Robert E., 1/2 to Snyder, Harry A. Joint combination actuated and key actuated padlock. 3,823,584, Cl. 70-21.000.
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Glaser, Donald A., to Widde-Glaser, Inc. Expandable roll core shaft unit. 3,823,892, Cl. 242-72.000.
Glass, Floyd M., to United States of America, Atomic Energy Commission. Magnetic self-latching pressure switch. 3,824,512, Cl. 335-205.000.
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Glaze, Thurman A. Automatic wiper and light control. 3,824,405, Cl. 307-10.0ls.
Gloge, Detlef Christoph; and Marcatili, Enrique Alfredo Jose, to Bell Telephone Laboratories, Incorporated. Graded-index optical fiber. 3,823,997, Cl. 350-96.0wg.
Glover, Douglas Wade, to AMP Incorporated. Electrical connector assembly. 3,824,524, Cl. 339-60.00r.
Glover, Douglas Wade, to AMP Incorporated. Positive stop high voltage connector. 3,824,526, Cl. 339-94.00r.
Glover, Douglas Wade; Gardner, Mervin Amos; and Johnson, Erlon Fitch, to AMP Incorporated. Low voltage terminal strip capable of withstanding high voltage transients. 3,824,553, Cl. 339-198.0ga.
Glushko, Mikhail Fedorovich; Skalatsky, Viktor Klimentievich; Anastasiadi, Emmanuil Filippovich; and Davydov, Jury Lvovich. Method of making spun multi-wire articles. 3,823,543, Cl. 57-166.000.
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Gordon, Robert E., to Monsanto Company. Tank with integral remotely controlled power actuated bottom valve. 3,823,731, Cl. 137-395.000.
Gordon, Ronnie D., to Continental Oil Company. Preparation of ethers. 3,824,295, Cl. 260-614.00r.
Gorsich, Richard D., to Ethyl Corporation. Tri-n-amyl lead salt of saturated aliphatic monocarboxylic acid. 3,824,187, Cl. 252-1.000.
Gorsich, Richard D., to Ethyl Corporation. Preparation of trialkyl lead salts of aliphatic monocarboxylic acids. 3,824,265, Cl. 260-436.000.
Gortz, Bernd; and Fehrenbacher, Wolfgang, to Kundo Kieninger & Obergfell. Crystal-controlled digital clock. 3,823,546, Cl. 58-23.00r.
Goto, Kenji; and Mizuno, Kiyohiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. Change-over valve assembly for a gas passageway. 3,823,556, Cl. 60-288.000.
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Griffin, Alphonso. Desalinization system. 3,824,156, Cl. 202-180.000.
Grimmelikhuysen, Jan Christiaan; and Schroeder, Arnold, to Lever Brothers Company. Preparation of polyacetylalkylene diamines. 3,824,286, Cl. 260-561.00r.
Grisct, Ernest J., Jr., to Akzona Incorporated. Apparatus for interlacing yarns. 3,823,449, Cl. 28-1.400.
Grob, Konrad, to Gutmann, Alfred Gesellschaft fur Maschinenbau. Device for crushing large molding sand pieces and for separating residual iron parts therefrom. 3,823,881, Cl. 241-79.100.
Gross, Harald, to Voith, J. M., GmbH. Device for varying the thrust of a pivotable screw on a ship. 3,824,380, Cl. 235-150.200.
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Guichard, Jean, to Centre d'Etudes Techniques des Industries de l'Habillement. Machine for turning-in the edge of a piece of flexible sheet material, especially a textile fabric. 3,823,935, Cl. 270-61.00r.
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Hale, Max, to Simpla Plastics Limited. Urinary drainage devices. 3,823,716, Cl. 128-275.000.
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Handewith, Howard J., to Ingersoll-Rand Company. Earth-supporting apparatus and method. 3,823,566, Cl. 61-85.000.
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Hanning, John R., to Aro Corporation, The. Sequential valve for rotary vane air motors. 3,824,046, Cl. 418-82.000.
Hansen, Ralph H., to Stevens, J. P., & Co., Inc. Method and apparatus for obtaining energy from temperature changes. 3,823,560, Cl. 60-527.000.
Hanson, Walter J., to Pitney-Bowes, Inc. Value dispensing mechanisms. 3,823,666, Cl. 101-91.000.
Harada, Shunichi; and Karafian, Maxim, to Chemical Construction Corporation. Urea synthesis process. 3,824,283, Cl. 260-555.00a.
Harders, Holton G. Attitude indicator for load lifting apparatus and method. 3,824,578, Cl. 340-267.00c.
Hardy, John C.; and Stevens, A. Brian, to Rockwood Systems Corporation, mesne. Foam dispersal nozzle. 3,823,876, Cl. 239-504.000.
Harlan, James T., Jr.; Pettit, Donald; Blackwell, Frederick B.; and Carter, Alan R., to Shell Oil Company. Method of halogenating and adhering thermoplastic elastomeric block copolymers. 3,824,149, Cl. 161-190.000.
Harms, Harland Elmer: *See—*

Holoubek, George Henry; Ales, David Edward; Harms, Harland Elmer; Erickson, Warren E.; Ditmars, Maurice A.; and Brookhart, J. Keith, 3,823,850.

Harnick, Robert, to Blair Manufacturing Co. Chair. 3,823,980, Cl. 297-455.000.

Harrel Incorporated: *See—*
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Harrington, Roy L.: *See—*
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Harris, Cliff Andrew, to Bell Telephone Laboratories, Incorporated. Automatic cable equalizer. 3,824,501, Cl. 333-18.000.

Harris, John D.: *See—*
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Harris, Leroy S., to K-G Industries, Inc. Controller for compacting machines. 3,824,054, Cl. 425-149.000.

Harrow, Layton Bruce. Method of forming pleated fabric. 3,823,452, Cl. 28-72.0ft.

Hart, Douglas G. Yarn spinning apparatus. 3,823,539, Cl. 57-73.000.

Hart, Frederick Harry: *See—*
Bryan, John; and Hart, Frederick Harry, 3,824,088.

Hart, George Henry, to Pye Limited. Recording television signals. 3,824,335, Cl. 178-6.60a.

Hartford, Winslow H., to Allied Chemical Corporation. Manufacture of copper dichromate and related materials. 3,824,160, Cl. 204-89.000.

Harukawa, Tadatsugu: *See—*
Asako, Tsunehiko; Soma, Takenobu; Masuya, Hirotomo; Harukawa, Tadatsugu; and Miki, Takuichi, 3,824,237.

Harvey, Robert Joseph; and Fennell, John Richard, to Mirlex Corporation. Method of preparing taste-modifying composition. 3,824,323, Cl. 426-429.000.

Hascoe, Norman. Method of fabricating an hermetically sealed container. 3,823,468, Cl. 29-588.000.

Hase, Alfred Max. Ferroresonant voltage regulating circuit. 3,824,449, Cl. 323-6.000.

Haslett, Melvin: *See—*
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Haswell, Charles K., to Barker Manufacturing Company, Inc. TV/FM/AM antenna coupler. 3,824,599, Cl. 343-822.000.

Hatcher, Herbert J.; Truda, Robert J.; Lechner, Thomas G.; and McDuff, Charles R., to Economics Laboratory, Inc. Slime control in industrial waters. 3,824,184, Cl. 210-1.000.

Hatton, Gildas, to Acrazur Constructions Aeronautiques Anciens Etablissements Claude Ethatton. Inflatable profile with high pneumatic rigidity. 3,823,711, Cl. 128-78.000.

Hauke, Gary F., to Perma-Blade, Inc. Windshield wiper blade assembly. 3,823,437, Cl. 15-250.420.

Haworth, Gordon R.; Edmond, Tibor O.; and Poundstone, William N., to Continental Oil Company. Drill hole guidance system. 3,823,787, Cl. 175-24.000.

Hayafune, Yukio, to Tsukishima Kikai Co., Ltd. Main valve for rotary filters. 3,823,830, Cl. 210-330.000.

Hayashi, Chihiro: *See—*
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Hayashi, Kiyoshige; Kawasaki, Akihiro; and Maruyama, Isao, to Maruzen Petrochemical Co., Ltd. Process for preparing a copolymer of a conjugated diene and ethylene. 3,824,223, Cl. 260-85.30r.

Hayden, Richard R.: *See—*
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Hayes, Roger. Retaining means for sphygmomanometer valve control head. 3,823,707, Cl. 128-2.05g.

Haysom, Derek W. R.: *See—*
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Healy, James W., to Automatic Systems, Inc. Fluid dispenser control system. 3,823,751, Cl. 141-198.000.

Healy, Lawrence W.; Wang, Wu Lan; and Gross, Joseph I., to Tenneco Chemicals, Inc. Method of preparation of a supple sheet composition. 3,824,142, Cl. 156-148.000.

Heckman, Ray Flow: *See—*
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Heckmanns, Ernst: *See—*
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Hedrich, Loren E.: *See—*
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Heese, William E., to Allen Electric and Equipment Company. Actuator assembly. 3,823,758, Cl. 160-188.000.

Hegarty, Brian Anthony; and Trevail, Lewis Herbert, to RCA Corporation. High heat dissipation solder-reflow flip chip transistor. 3,823,469, Cl. 29-589.000.

Hegedus, Balthasar: *See—*
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Heitholt, Jurgen; and Gieb, Werner, to Herford, Richard Heinze. Connecting part for shaped structural bodies made from synthetic material, especially for shaped structural bodies of frame-type make-up. 3,823,521, Cl. 52-285.000.

Hekimian Laboratories, Inc.: *See—*
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Hekimian, Norris C., to Hekimian Laboratories, Inc. Gyrator circuits comprising operational amplifiers and oscillators utilizing same. 3,824,496, Cl. 331-132.000.

Hellberg, Gerhard: *See—*
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Helmrich, Gunter; and Wulfing, Fritz, to Vereinigte Aluminium-Werke Aktiengesellschaft. Apparatus for making shaped bodies. 3,824,060, Cl. 425-425.000.

Heltzel, Robert E. Molding machine for producing concrete products. 3,824,059, Cl. 425-424.000.

Henderson, Edward, deceased (by Henderson, Kathryn S., executrix). Mono-O-phthalyl piperazine and mono-piperazine mono-phthalate di-salts. 3,824,243, Cl. 260-268.00c.

Henderson, Kathryn S., executrix: *See—*
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Henderson, Stephen Phelps: *See—*
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Henkel & Cie GmbH: *See—*
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Henrick, Clive A., to Zoecon Corporation. Aliphatic hydrocarbon 2,4-dienamines. 3,824,290, Cl. 260-583.00h.

Henriksson, Lars-Goran: *See—*
Stroberg, John Emil; Thunblom, Nils Birger; and Henriksson, Lars-Goran, 3,823,583.

Henry, Marcel; and Malatray, Andre, to Colgate-Palmolive Company. Article transfer. 3,823,809, Cl. 198-25.000.

Hentschel, Michael, to Sprecher & Schuh AG. Circuit arrangement for recognition of a defect caused by phase breakdown or ground short in the current supply of a three-phase motor. 3,824,430, Cl. 317-13.00r.

Hepp, Wolfgang; Pimiskern, Klaus; and Herbert, Werner, to Dornier Systems GmbH. Manufacturing device for shafts with spherical shaft ends. 3,824,369, Cl. 219-121.0eb.

Herbener, Henry M. Women's garments. 3,823,721, Cl. 128-524.000.

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Herford, Richard Heinze: *See—*
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Heslinga, Lammert; Pabon, Hendrik Jacob Johannes; and van Dorp, David Adrian, to Lever Brothers Company. Process for preparing ethylenic carboxylic acids. 3,824,262, Cl. 260-409.000.

Hess, Jean-Marc; and Knop, Adolph, to Constructions Electrotechniques du Centre. Inductor having a magnetic casing formed by stacked stampings. 3,824,517, Cl. 336-83.000.

Hester, Jackson B., Jr., to Upjohn Company, The. 1,2,4,5-Tetrahydropyrrolo [3,2,1-j k] [1,4]-benzodiazepin-7 (6H)-ones and 1,2,4,5-tetrahydropyrrolo [1,2,3-ef][1,5]-benzodiazepin-6 (7H)-ones. 3,824,230, Cl. 260-239.30t.

Heubeck, Erich, to Siemens Aktiengesellschaft. Dentist's working tool. 3,823,475, Cl. 32-22.000.

Hewlett-Packard Company: *See—*
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Heyman, Albert M.; and Friedman, Edward H., to Honeywell Information Systems Inc. Multivoltage, regulated power supply with fault protection. 3,824,441, Cl. 321-2.000.

Hilfman, Lee, to Universal Oil Products Company. Hydrocracking process. 3,824,180, Cl. 208-111.000.

Hill, Howard D. W.: *See—*
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Freeman, Raymond; and Hill, Howard D. W., 3,824,452.

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Himmelbauer, Alain Jacques: *See—*
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Hinckley, John M., to Beloit College. Engine. 3,824,044, Cl. 418-12.000.

Hinton, Everett H., Jr.; and Avery, Larry E., to Burlington Industries, Inc. Soil release composition. 3,824,125, Cl. 117-138.80f.

Hirafuji, Van, to Ricoh Co., Ltd. Device for temporarily rendering a conveyed sheet material impervious to the action of conveyor means. 3,823,937, Cl. 271-276.000.

Hirai, Kentaro: *See*—
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Hodges, Jimmie Ray, to Penn-Olin Chemical Company. Electrolytic cell for alkali metal chlorates. 3,824,172, Cl. 204-269.000.

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Hoffman, Simon J. Blade attachment means for saber saw assembly. 3,823,473, Cl. 30-338.000.

Hoffman-La Roche Inc.: *See*—
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Hofmann, Albert, to Linde Aktiengesellschaft. Method of insulating ducts. 3,824,140, Cl. 156-90.000.

Hofmann, Gottfried; and Wagner, George J., to United States Steel Corporation. Ramp-type apparatus for disconnecting and storing a flexible starter bar. 3,823,763, Cl. 164-282.000.

Hofmeister, Helmut: *See*—
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Hogg, Derek, to Dunlop Limited. Apparatus for use in mounting tires on and removing tires from wheel rims. 3,823,757, Cl. 157-1.240.

Hojnacki, Donald G., to Coilcraft, Inc. Convergence magnet and housing assembly. 3,824,514, Cl. 335-210.000.

Holanek, Stanislay; and Stolpa, Karel, to Chirana Zavody Zdravotnickej technicky Odborovy podnik. Suppository introducer. 3,823,715, Cl. 128-264.000.

Hollandse Signaalapparaten B.V.: *See*—
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Holman, Benedictus Timotheus Johannes. Screening cage. 3,824,515, Cl. 335-213.000.

Holman, Harry Francis, to Hunfos Fabrikker. Method of anchoring finely granulated dust material from purifying plants for metallurgic waste gases in order to render the dust disposable or utilizable. 3,824,091, Cl. 71-12.

Holmes, Billy G., to Mobil Oil Corporation. Oil recovery method by oxidation and forming surfactants in situ. 3,823,776, Cl. 166-261.000.

Holmes, Karl A.; Knepshield, James R.; and Knutsen, Dale E., to United States of America, Navy. Aerial launch system. 3,823,901, Cl. 244-118.00r.

Holotron Corporation, mesne: *See*—
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Holt, Ronald A., 1/3 each to Holt, Chali; Holt, Joan B.; and Holt, Evan N. Safety catch for trap. 3,823,505, Cl. 43-81.500.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
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Honeywell Bull (Nederland) N.V. (Societe anonyme): *See*—
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Hoppesch, Joseph P., to Borg-Warner Corporation. Anti-evasion system for a breath alcohol tester. 3,823,601, Cl. 73-23.000.

Horai Tekko Sho Co., Ltd: *See*—
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Horii, Kazuo; Ohya, Kazuo; Zama, Matuo; and Takashina, Hiroyuki, to TDK Electronics C., Ltd. Resistor. 3,824,521, Cl. 338-275.000.

Horowitz, Irving, to Teleglobe Pay TV System. Pay television system. 3,824,332, Cl. 178-5.100.

Horvath, Paul J. Vehicle tamper alarm system. 3,824,539, Cl. 340-65.000.

Houben, Heinz; Kramer, Carl; and Stein, Heinrich, to Monforts, A. Apparatus for full-width suspension guidance of webs of material. 3,823,488, Cl. 34-156.000.

Houlihan, William J.; and Nadelson, Jeffrey, to Sandoz-Wander, Inc. 3-(4-Halophenyl)-3-(2-pyridyl)-3,4-dihydro isocoumarins. 3,824,244, Cl. 260-295.00f.

Houseman, Henry J.; and Roll, Louis C., to Eaton Corporation. Hand grip control assembly. 3,823,616, Cl. 74-471.000.

Howe, William E.; and Buell, Bruce A., to Voycall. Hook-switch cradle assembly for electrical communication handset. 3,824,353, Cl. 179-164.000.

Howerton, William W. Polyesters of 4,4'-hexafluoroisopropylidene diphenol. 3,824,211, Cl. 260-47.00c.

Howland, John W., to Pittsburgh & Midway Coal Mining Co., The. Land reclamation apparatus. 3,823,782, Cl. 172-292.000.

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Hudson, Robert Clive; and Richards, John. Support structure for dental models. 3,823,476, Cl. 32-32.000.

Huffman, George W.; and Molloy, Bryan B., to Lilly, Eli, and Company and Process for the preparation of 2-substituted-1, 3,4-thiadiazole-5-thiols. . 3,824,246, Cl. 260-302.0sd.

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Hughes, Charles R. Paper hanger's tool box. 3,823,817, Cl. 206-349.000.

Hughes, Robert D.; and Steigelmann, Edward F., to Standard Oil Company. Process for separating carbon monoxide. 3,823,529, Cl. 55-16.000.

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Infanger, Arthur W.; and Brownlie, Alan W., to Agua Marine Manufacturing Limited. Steering system. 3,823,617, Cl. 74-498.000.
Ingalls, Philip: *See*—
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Ingersoll-Rand Company: *See*—
Handewith, Howard J., 3,823,566.
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Myers, Herman A., 3,823,625.
Inose, Fumiyuki; and Thuruoka, Hisashi, to Hitachi, Ltd. Digital control apparatus. 3,824,383, Cl. 235-153.00r.
Institut De Recherches De La Siderurgie Francaise (Irsid): *See*—
Petit, Pierre; and Verjux, Pierre, 3,824,015.
Institut Francais du Petrole des Carburants et-Lubrifiants et Commissariat a l'Energie Atomique: *See*—
Mileo Jean-Claude; Sillion, Bernard; and de Gaudemaris, Gabriel, 3,824,248.
Institutet for Produktudvikling: *See*—
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Institutul de Cercetari si Proiectari Pentru Industria Lemnului: *See*—
Ionescu, Mihai, 3,823,474.
Integral Systems, Inc.: *See*—
Sandstrom, John W.; and Cloud, Kenneth C., 3,823,730.
Inter-Hull: *See*—
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Bringol, Charles Ronald, 3,824,580.
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Davis, Wilbur M.; and Yates, Robert E., 3,823,665.
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International Telephone and Telegraph Corporation: *See*—
Majkrzak, Charles P.; and Polgar, Michael S., 3,824,600.
Sensney, Cleatus R., 3,824,340.
Ionescu, Mihai, to Institutul de Cercetari si Proiectari Pentru Industria Lemnului. Carrying frame for power saw. 3,823,474, Cl. 30-383.000.
Ironside, John Michael; Hodgson, Duncan Barry; Cops, Michael Herbert; and Williams, Malcolm, to Lucas, Joseph, (Electrical) Limited. Process control apparatus. 3,824,574, Cl. 340-213.00q.
Ishihara, Masao; Sato, Shui; Sakamoto, Eiichi; and Sugino, Osakuzu, to Konishiroku Photo Industry Co., Ltd. Photographic coating compositions. 3,824,102, Cl. 96-100.000.
Ishii, Kunio: *See*—
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Ishikura, Yutaka, to Horai Tekko Sho Co., Ltd. Shearing crusher. 3,823,878, Cl. 241-69.000.
Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft: *See*—
Wehrmann, Felix, 3,824,159.
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ITT Industries, Inc.: *See*—
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Jacobson, Charles L.; Tambert, John; and Zurakowski, Stanley J., to Xerox Corporation. Data communications network. 3,824,334, Cl. 178-6.000.
Jacobson, Charles L., to Xerox Corporation. Data communication system. 3,824,341, Cl. 178-88.000.
James, Dennis Bryan; and McEowen, James Royce, to Bell Telephone Laboratories, Incorporated. Conference bridge circuit. 3,824,344, Cl. 179-11.0cn.
Janci, John. Reamer. 3,824,027, Cl. 408-225.000.
Janssen, Wilhelmus Henricus. Device for packing in foil a bunch of elongated objects. 3,823,528, Cl. 53-198.00r.
Jarvis, Edward M., to Standard Pressed Steel Co. Tensioning device. 3,823,908, Cl. 248-351.000.
Jay, Gareth; and Wardman, Edward, to Imperial Chemical Industries Limited. Plastics laminate. 3,824,139, Cl. 156-79.000.
Jeffers, Frederick J.: *See*—
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Jensen, William. Meat mincing machine. 3,823,882, Cl. 241-152.00r.
Jerabek, Robert D., to PPG Industries, Inc. Novel pigment dispersant. 3,824,111, Cl. 106-308.00n.
Jerue, Richard A., to Devlieg Machine Company. Machine tool with automatic tool changing mechanism. 3,823,466, Cl. 29-568.000.
Jerue, Richard A., to Devlieg Machine Company. Power draw bolt. 3,823,642, Cl. 90-11.00d.
Jilek, Franz: *See*—
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Jochimski, Stefan. Boat fender and brake. 3,823,682, Cl. 114-219.000.
Johnson, Bennie R. Integral casket handle and base with concealed hinge. 3,823,447, Cl. 27-2.000.
Johnson, Erlon Fitch: *See*—
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Johnson, George W.; and Teichner, Maurice D., to Presin Company, Inc. Electronic counter. 3,824,378, Cl. 235-92.0pe.
Johnson, Harold R. Kitchen composter. 3,823,879, Cl. 241-101.200.
Johnson, John Clark: *See*—
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Johnson, Leland A.: *See*—
Johnson, Leland R.; and Johnson, Leland A., 3,823,889.
Johnson, Leland R.; and Johnson, Leland A. Toilet paper holder. 3,823,889, Cl. 242-55.200.
Johnson, Miles Carrington; and Clock, Donald Page, to RCA Corporation. Power supply keep alive system. 3,824,450, Cl. 323-23.000.
Jones, Hale M.; and Urynowicz, James P., to Ampex Corporation. Automatic tape loading apparatus and method therefor. 3,823,895, Cl. 242-186.000.
Jones, Henry B.: *See*—
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Jouet, Etienne; and Rebuffe, Pascal. Method of manufacturing a spirally wound heat exchanger. 3,823,458, Cl. 29-157.30r.
Jureit, John Calvin; and Des Jardins, John Melvin, to Automated Building Components, Inc. Hinged connector plate. 3,823,522, Cl. 52-641.000.
Jureit, John Calvin; and Kushner, Benjamin Harry, to Automated Building Components, Inc. Repair press for pallet stringers. 3,823,861, Cl. 227-153.000.
Justice, Benjamin: *See*—
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Kabushiki Kaisha Sega Enterprises: *See*—
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Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to Societe Anonyme dite: L'Oreal. Dyeing human hair with indamine salts. 3,824,075, Cl. 8-10.000.
Kalopissis, Gregoric; and Vanlerberghe, Paris Guy, to Societe Anonyme dite: L'Oreal. Cosmetic emulsifiers. 3,824,294, Cl. 260-611.00b.
Kamezawa, Yasutoki: *See*—
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Kanda, Masami. Extractor tool. 3,823,462, Cl. 29-268.000.
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Kannegiesser, Herbert, Kommanditgesellschaft: *See*—
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Kanno, Masashi; Miki, Sukeichi; and Takezaki, Tsuneo, to Matsushita Electric Industrial Co., Ltd. FM stereo demodulator. 3,824,346, Cl. 79-15.0bt.
Karafian, Maxim: *See*—
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Karobath, Ernst; Rippel, Leopold; Schmidinger, Hans; and Pulitzer, Wolfgang, to Telephon- und Telegraphen-Fabriks-Aktiengesellschaft Kapsch & Sohne. Process and apparatus for joining a tubular thermoplastic container jacket, by means of ultrasonics, to a termoplastic cap to form a liquid-tight seal. 3,824,138, Cl. 156-69.000.
Kartaschoff, Peter. Atomic beam resonator having a confocal conics field geometry in the second state selector. 3,824,394, Cl. 250-251.000.
Kashimoto, Mitsugi, to Alps Electric Co., Ltd. Multichannel magnetic head. 3,824,622, Cl. 360-125.000.
Kasubick, Robert V., to Pfizer Inc. Direct mono-esterification of arylmalonic acids. 3,824,275, Cl. 260-475.0sc.
Kato, Hiroshi: *See*—
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Katsushima, Atsuo; Hisamoto, Iwao; Fukui, Shoshin; Takahisa, Kato; Nagai, Masayoki; and Iwatani, Akitoshi, to Daikin Kogyo Kabushiki Kaisha. Oil- and water repellent composition consisting of a fluorine containing polymer, selected salts and an antistatic gent. 3,824,126, Cl. 117-139.50r.
Kawakami, Yukichika: *See*—
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Kawasaki, Akihiro; and Maruyama, Isao, to Maruzen Petrochemical Co., Ltd. Process for preparing alternating copolymers of butadiene and alpha-olefins. 3,824,224, Cl. 260-85.30r.
Kawasaki, Harumi; and Nakajima, Tohru, to Asahi Kogaku Kogyo Kabushiki Kaisha. Pattern recognizing systems. 3,824,546, Cl. 340-146.30f.
Kay, Garth: *See*—
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Kayama, Naohiro: *See*—
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Kaye, Howard, to Research Corporation. Non-cyclopolymerized poly-l-vinyluracils. 3,824,225, Cl. 260-88.30r.
Keller, Alfred John, to AMP Incorporated. Connector latch assembly. 3,824,525, Cl. 339-91.00r.
Keller Glove Mfg. Company: *See*—
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Kendall, Giles A.; Hoppe, James C.; and Hsieh, Wilbur P., to Manasco Manufacturing Company. Dual length pendulum shock absorbing system. 3,823,903, Cl. 248-18.000.
Keogh, Patrick Joseph: *See*—
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Kiefer, Hans; Rohr, Wolfgang; and Naarmaan, Herbert, to Badische Anilin & Soda-Fabrik Aktiengesellschaft. Production of N-(1- alkeny)-carbamoyl compounds. 3,824,280, Cl. 260-544.00c.
Kienckе, Uwe, to Bosch, Robert, GmbH. Digital divider circuit. 3,824,385, Cl. 235-150.300.
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Kimura, Akio: *See*—
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King, Colin Forbes, to Dunlop Holdings Limited. Pressure reducing device. 3,823,743, Cl. 138-42.000.
King, James G., to International Business Machines Corporation. Complementary offset binary converter. 3,824,589, Cl. 340-347.0dd.
King, Kenneth Gordon, to Westinghouse Brake and Signal Company Limited. Inverter circuits. 3,824,442, Cl. 321-5.000.
King, Laurence F., to Esso Research and Engineering Company. Organotin salts of hydroxy-substituted alkanoic acids stabilizers for polyvinyl chloride. 3,824,210, Cl. 260-45.75k.

Kinki Printing Company Limited: *See—*
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Kirby, Edward, to TRW, Inc. Electrical connector assembly. 3,824,552, Cl. 339-128.000.
Kirby, John A., to Lilly, Eli, and Company. Bromination process. 3,824,292, Cl. 260-602.000.
Kirchmayr, Rudolf; Peterli, Hans Jakob; and Heller, Hansjorg, to Ciba-Geigy Corporation. UV absorbent, light stable compounds. 3,824,273, Cl. 260-473.00r.
Kishikawa, Toshio: *See—*
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Kleimann, Helmut: *See—*
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Klein, Keith William; and Palmieri, Joseph Michael, to General Electric Company. Electrical conductor terminal assembly. 3,824,555, Cl. 339-246.000.
Klett, Stanley D., to Xerox Corporation. Magnetic brush assembly. 3,823,688, Cl. 118-637.000.
Klingelhofer, Gerd, to Fritz Keiper. Hinge fitting for seats with adjustable backrest, especially automotive vehicle seats. 3,823,440, Cl. 16-139.000.
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Kloczewski, Harold A.; and Shaeffer, William R., to Grace, W. R., & Co. Solder resistant photopolymer composition. 3,824,104, Cl. 96-115.00r.
Knapp, Edward J., Jr., to Chase-Shawmut Company, The. Electric fuse having blown fuse indicator. 3,824,520, Cl. 337-161.000.
Knepshield, James R.: *See—*
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Knitter, Roger W.: *See—*
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Kobayashi, Fukashi; Ono, Mitsuaki; Yatsugake, Masahiko; and Fukushima, Yukihiro, to Matsushita Electric Industrial Co., Ltd. Magnetic tape copying apparatus. 3,824,617, Cl. 360-16.000.
Kobayashi, Hiroshi; and Okada, Goro, to Babcock-Hitachi. Clinker cooling apparatus. 3,824,068, Cl. 432-80.000.
Kobayashi, Hisaminc, to Shikishima Tipton Manufacturing Company Limited. Automatic centrifugal barrel finishing apparatus. 3,823,512, Cl. 51-164.000.
Kobayashi, Seihin; and Torii, Michihiro, to Fuji Denki Kagaku Kabushiki Kaisha. Magnetic thin film plated wire memory. 3,824,566, Cl. 340-174.0pw.
Koda, Nobuo J.; and Lipton, Lewis T., to Hughes Aircraft Company. Liquid crystal display panel. 3,824,003, Cl. 350-160.20c.
Koehler, Albert M.: *See—*
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Koehler, Siegfried, to TREPEL AG. Elevator table. 3,823,915, Cl. 254-122.000.
Koepp, Ronald L.; and Dudkowski, Stanley J., to National Cash Register Company, The. Processing apparatus. 3,823,685, Cl. 118-49.000.
Kogan, Petr Grigorievich: *See—*
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Kolb, Arthur F.; and Gilmore, John J., to Cutler-Hammer, Inc. Mechanical interlock for electric switches. 3,824,510, Cl. 335-160.000.
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Kompfner, Rudolf; and Marcatili, Enrique Alfredo Jose, to Bell Telephone Laboratories, Incorporated. Multicore, multimode optical wave transmission line. 3,823,996, Cl. 350-96.0wg.
Konig, Christian: *See—*
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Konik, Edward H.; Drozd, Stanley C.; Small, Charles W.; Stuart, Robert W.; Cox, Richard E.; and Dery, William R., to Dynamics Research Corporation. Adaptive diagnostic aid console for system maintenance. 3,823,490, Cl. 35-10.000.
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Kornylak, Andrew T.; and Tabler, Charles P., to Kornylak Corporation. Continuous molding conveyor with side clamping and release. 3,824,057, Cl. 425-329.000.
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Korodi, Miklos B. Removeable safety plug for fifth wheel slot. 3,823,961, Cl. 280-432.000.
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Krell, Benno. Shoe warmer. 3,823,434, Cl. 12-129.400.
Kroeck, Herbert. Control for lawn sprinkler. 3,823,874, Cl. 239-65.000.
Kroner, Klaus, to U.S. Philips Corporation. Circuit arrangement for the phase adjustment of a PAL switch. 3,824,412, Cl. 307-269.000.
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Kubo, Scitoku; Akashi, Teruo; and Hayashi, Chihiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle automatic transmission control system. 3,823,621, Cl. 74-752.00a.
Kucera, Joseph A. Combined radiator cap and heater assembly. 3,824,370, Cl. 219-208.000.
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Kukulowicz, Adolph F. Tandem wheeled roller skate. 3,823,952, Cl. 280-11.200.
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Kurkjian, Gregory A., Jr., to Pratt, Henry, Company. Valve for installation in flume. 3,823,913, Cl. 251-305.000.
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Laithwaite, Eric Roberts; and Fellows, Thomas George, to Tracked Hovercraft Limited. Secondary member for single-sided linear induction motor. 3,824,414, Cl. 310-13.000.
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Lamberti, Vincent, to Lever Brothers Company. Process for preparing salts of ether polycarboxylic acid. 3,824,279, Cl. 260-535.00p.
Lambrecht, Willy, to Appareillage Technique et Industriel S.A. Play detector for detecting play and inspecting the fastening of parts of stationary motorcars and trailers. 3,823,485, Cl. 33-203.140.
Lamperski, Heinrich, to Glyco-Metall-Werke Daelen & Loos GmbH. Friction bearing. 3,823,991, Cl. 308-73.000.
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Lawrence, Willis G.; and Coffin, Leon B., to Research Corporation, mesne. Permeable wollastonite ceramic mass. 3,824,112, Cl. 106-38.300.
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Locke, Edward V., to Avco Corporation. Laser welding. 3,824,368, Cl. 219-121.0lm.
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Loison, Robert. Centrifugal separating apparatus. 3,823,869, Cl. 233-20.00r.
Lokey, Robert C. Braille typewriter. 3,823,804, Cl. 197-6.100.
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Loxley, Ted A.; Wheaton, Harold L.; and Webb, John M., to Sherwood Refractories Inc., mesne. Method of coating preformed ceramic cores. 3,824,113, Cl. 117-5.200.
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Luedtke, Ronald E., to International Harvester Company. Power pitching and angling bullgrader. 3,823,783, Cl. 172-202.000.
Luiz, Fernando A., to International Business Machines Corporation. Data storage track padding apparatus. 3,824,563, Cl. 340-172.500.
Lum, Albert K W. Apparatus for attaching objects to each other. 3,823,814, Cl. 206-225.000.
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Mandel, Lewis R. Method of treatment. 3,824,315, Cl. 424-251.000.
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Matalon, Ralph. Flameproof and fireproof resinous foams. 3,824,200, Cl. 260-2.50r.
Matsui, Takao. Magazine having latch means. 3,824,613, Cl. 354-281.000.
Matsuo, Koichi: *See*—
Ushimaru, Yutaka; Matsuo, Koichi; and Tochio, Yukihiro, 3,824,194.
Matsushita Electric Industrial Co., Ltd.: *See*—
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Kobayashi, Fukashi; Ono, Mitsuaki; Yatsugake, Masahiko; and Fukushima, Yukihiro, 3,824,617.
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Matthias, Guenther; Palm, Christoph; and Schulz, Gerhard, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of N,N,N,N'-tetraacetylethylenediamine. 3,824,287, Cl. 260-561.00r.
Mauri, Marcello Massi; Moggi, Pietro Antonio; and Romano, Ugo, to Snam Progetti S.p.A. Process for preparing indole. 3,824,252, Cl. 260-319.100.
Maus, Helmut: *See*—
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Mautz, Karlheinz; and Schwarz, Alois, to Messerschmitt-Bolkow-Blohm GmbH. Suspension of rotor blades on the rotor head of a rotorcraft without the use of flapping or drag hinges. 3,824,037, Cl. 416-136.000.
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May, Denis Ronald William, to Hanger, J. E., and Company Limited. Artificial leg with stable link-type knee joint. 3,823,424, Cl. 3-22.000.
Maytag Company, The: *See*—
Cotton, Curran D., 3,824,476.
Cotton, Curran D., 3,824,477.
Mazzagatti, Concezio. Rotary piston engine having alternately used external combustion chambers. 3,823,694, Cl. 123-8.270.
Mc Elreath, Elmer J., to Ultimatic Products, Inc. Humidifier. 3,823,922, Cl. 261-92.000.
Mc Grew, James D. Rope splicing fid. 3,823,535, Cl. 57-23.000.
McBride, Alan L., to Texas Instruments Incorporated. Digital processor for selectively synthesizing sinusoidal waveforms and frequency modulations. 3,824,498, Cl. 332-9.00r.
McCalley, Edward W.: *See*—
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McClure, William M.: *See*—
Winzeler, James E.; and McClure, William M., 3,823,802.
McCracken, Robert H., to United States of America, Army. Coupling device and method for simultaneous impedance balancing. 3,824,503, Cl. 333-26.000.
McDermott, Hugh L. Floating rotary ring member of fluid displacement device. 3,824,047, Cl. 418-171.000.
McDonald, Edwin Robert, to AB Hammars Mekaniska Verkstad. Apparatus for cutting and locating flexible bed laths in a wood bundle. 3,823,632, Cl. 83-150.000.
McDonnell Douglas Corporation: *See*—
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McGary, Robert L., to Furnas Electric Company. Magnetically operated electric switch device. 3,824,509, Cl. 335-132.000.
McGhee, Michael J., to ITT Industries, Inc. Contact retention assembly. 3,824,523, Cl. 339-59.00r.
McGlashen, James N., to Dunlop Holdings Limited. Coating apparatus. 3,823,687, Cl. 118-421.000.
McGranaghan, Francis R.; and Shanoski, Henry, to General Tire & Rubber Company, The. Maturated polyester polyurethane compositions. 3,824,201, Cl. 260-18.0tn.
McGraw-Edison Company: *See*—
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McGuire, George. Table supported surgical retractor and pelvic support. 3,823,709, Cl. 128-20.000.
McGuirk, Francis A., Jr., to Wagner Electric Corporation. Power control circuit for automatic vehicles and the like. 3,824,403, Cl. 307-10.0at.
McIlrath, William P.; and Holstein, Frederick W., to Racine Railroad Products, Inc. Rail polishing machine. 3,823,455, Cl. 29-33.00r.
McIntosh, Michael D., to Landis Tool Company. Stepping motor control system. 3,824,440, Cl. 318-696.000.
McJones, Robert W. Area ratio excess flow shutoff valve system. 3,823,734, Cl. 137-498.000.
McKenna, Lawrence W., Jr., to Monsanto Company. Protective skin cream. 3,824,218, Cl. 424-78.000.
McLaughlin, Minor E., to Economic Development Corporation. Process for treating water. 3,823,767, Cl. 165-1.000.
McLeod, Fenwick R., Jr., to Warwick Electronics Inc. High voltage regulator. 3,824,427, Cl. 315-29.000.
McMillen, Russell G., to International Harvester Company. Latch mechanism. 3,823,976, Cl. 296-35.00r.
McMullan, Jeffrey S., to Continental Oil Company. Relay. 3,823,739, Cl. 137-624.270.
McNees, Sterling G.; and Polese, James P., to Varian Associates. Mesh type filamentary thermionic cathode emitter and tube using same. 3,824,424, Cl. 313-341.000.
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Mehltretter, Ludwig, to Messerschmitt-Bolkow-Bloh, Gesellschaft mit beschrankter Haftung. Method and apparatus for measuring and indicating the distance, distance variation, or both between an automotive vehicle and an obstacle. 3,824,592, Cl. 343-13.00r.
Meier, Gunter, to Pfaff Haushaltmaschinen GmbH. Sewing foot for sewing machines. 3,823,679, Cl. 112-235.000.
Meijer, Robert S., to Alnor Instrument Company; div. of Illinois Testing Laboratories, Inc. Pyrometer with digitalized linearizing correction having programmable read only memory. 3,824,585, Cl. 340-347.0nt.
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Melenric, John Alden. High speed valveless resonant pulse jet engine. 3,823,554, Cl. 60-249.000.
Mello, William R., to Colt Industries Operating Corporation. Swivel head assembly for five axis machine tool. 3,823,644, Cl. 90-17.000.
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Merriam, Donald R., to Stromberg-Carlson Corporation. Status indication circuit for shared telephone equipment. 3,824,348, Cl. 179-18.0ab.
Merriam, Donald R., to Stromberg-Carlson Corporation. Access circuit for shared telephone equipment. 3,824,350, Cl. 179-18.0ab.
Messerschmitt-Bolkow-Bloh, Gesellschaft mit beschrankter Haftung: *See*—
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Meyher, Edward J. Condition responsive disconnect arrangement for electrical cooking equipment. 3,824,374, Cl. 219-510.000.
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Miller, Alexander, Jr.; Anderson, Victor F.; Holt, Raymond W.; and Fortenbach, Robert W., to Shell Oil Company. Vapor releasing device. 3,823,873, Cl. 239-54.000.
Miller, Imrich M., to Universal Manufacturing Corporation. Coil forms and terminal. 3,824,519, Cl. 336-192.000.
Miller, Lester, to Bangor Punta Operations, Inc. Convertible top for boats and the like. 3,823,431, Cl. 9-1.00r.
Miller, Marie O. False eyebrows. 3,823,723, Cl. 132-5.000.
Miller, Robert; and Derderian, Carl, to Uniroyal, Inc. Manufacture of vulcanized elastomeric hose. 3,824,141, Cl. 156-143.000.
Milligan, Lee J., to Peripheral Systems Corporation. Controlled transport of a flexible medium. 3,823,945, Cl. 360-96.000.
Mills, Harry N.; and Roll, Henry E., said Mills, Harry N. assor to Owens-Illinois, Inc. Feeding wet glass batch. 3,823,920, Cl. 259-10.000.
Mills, Jeffrey P., to GTE Automatic Electric Laboratories Incorporated. PCM tone receiver using floating-point digital spectrum analysis. 3,824,471, Cl. 325-321.000.
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Minklei, Alfred O.; and Peterson, John A., to Hooker Chemical Corporation. Process for improving the thermal shrinkage resistance of leather and product produced thereby. 3,824,124, Cl. 117-138.000.
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Mixon, James Lenhart, Jr.; and Beinhaur, Ernest Lloyd, to AMP Incorporated. Resilient cover having a removable external support member. 3,824,331, Cl. 174-135.000.
Miyagawa, Frank H.; Kipnis, Daniel D.; and Mills, Thomas C., to Tremont Research Co., Inc. String tensioning mechanism. 3,823,609, Cl. 73-145.000.
Miyakawa, Seiichi: *See*—
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Miyashita, Tsuneo; and Chaussy, Leon Michel, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for separating and collecting fine particles in gas with stream of falling molten metal drops. 3,823,530, Cl. 55-72.000.
Mizuno, Kiyohiko: *See*—
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Mizzoni, Renat Herbert; and Blatter, Herbert Morton, to Ciba-Geigy Corporation. Pyridinesulfonic acids. 3,824,241, Cl. 260-294.80r.
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Moggi, Pietro Antonio: *See*—
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Molochnikov, Nikolai Vladimirovich; Charny, Abram Khaimovich; and Prokhorov, Vladimir Alexandrovich. Mechanism for the connection of a dummy bar with its head. 3,823,459, Cl. 29-200.00r.
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Morehouse, James, to Disk Systems Corporation. Alignable disk pack. 3,824,572, Cl. 340-174.10c.
Morel, Georges, to Aerazur Constructions Aeronautiques. Pneumatic apparatus for holding the posture of paralyzed, diseased, disabled or wounded persons. 3,823,712, Cl. 128-87.004.
Morey, Frederick E., III: *See*—
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Morgan, Marshall M. Animal training device. 3,823,691, Cl. 119-29.000.
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, to Nissan Motor Company, Limited. Gear train arrangements. 3,823,622, Cl. 74-759.000.
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Mueller, Floyd F.; and Aulik, Clarence J., to American Hospital Supply Corporation. Adjustment apparatus for stirrup assembly including rotating clamp bracket. 3,823,933, Cl. 269-328.000.
Mueller, Robert A., to Electron Emission Systems, Inc. Shift register. 3,824,478, Cl. 328-37.000.
Mukai, Kunio: *See*—
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Murai, Masayuki, to Pioneer Electronic Corporation. Magnetic head and simulated 4-channel stereo system. 3,824,618, Cl. 360-22.000.

Muranyi, Istvan; Voros, Attila; Varga, Janos; and Orosz, Ivan, to Labor Mueszeripari Muevek. Baking oven. 3,824,066, Cl. 432-57.000.

Murata, Minoru; Nishikawa, Tatsuo; and Hanagata, Takayoshi, to Canon Kabushiki Kaisha. Tape cartridge provided with a display portion. 3,823,808, Cl. 197-133.00r.

Murata Yutaka: *See—*
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Murata, Yutaka; and Izumi, Sigeru, to Hitachi, Ltd. and Murata Yutaka. Frequency analyzer. 3,824,384, Cl. 235-156.000.

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Mutschler, Ulrich; and Rittmannsberger, Norbert, to Bosch, Robert, GmbH. Arrangement for regulating fuel injection. 3,823,696, Cl. 123-32.0ea.

Myers, Herman A., to Innovate, Inc. Ratchet-like wrench. 3,823,625, Cl. 81-59.100.

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Naarmaan, Herbert: *See—*
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Narayan, Thirumurti L.; Cenker, Moses; Kan, Peter T.; and Patton, John T., Jr., to BASF Wyandotte Corporation. Unsymmetrically-substituted-s-triazines. 3,824,240, Cl. 260-249.500.

Natho, Paul J.; and Whaley, William L., to ACF Industries, Incorporated. Seats for gate valves. 3,823,911, Cl. 251-167.000.

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National Forge Company: *See—*
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National Steel Corporation: *See—*
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Nedeau, Herbert G.; and Stengard, Robert A., to Upjohn Company, The. Process for preparing self-skinned polyurethane foam. 3,824,199, Cl. 260-2.5az.

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Nelson Research & Development Company: *See—*
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Nihyakumen, Kouzi; Yokoyama, Taizo; Kamezawa, Yasutoki; and Aizawa, Tatsuo, to Mita Industrial Company, Limited. Diazo-type multicolor reproduction process. 3,824,101, Cl. 96-49.000.

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Nippon Air Brake Co., Ltd., The: *See—*
Tuji, Hirokazu, 3,823,701.

Nippon Electric Varian, Ltd.: *See—*
Funaki, Hidefumi; Tanaka, Toshiaki; Nakajima, Katsuyoshi; and Kanda, Yuichi, 3,824,410.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Tomisawa, Norio; Uchiyama, Yasuji; and Okumura, Takatoshi, 3,824,379.

Nippon Kogaku K.K.: *See—*
Toyoda, Kenji, 3,824,608.

Nippon Kokan Kabushiki Kaisha: *See—*
Ando, Ryo, 3,824,095.
Miyashita, Tsuneo; and Chaussy, Leon Michel, 3,823,530.

Nippon Steel Corporation: *See—*
Ohta, Kazuo; and Sawada, Seiji, 3,823,520.

Nishi, Fusako: *See—*
Ito, Hiroyuki; Sasaki, Yutaro; Miyamoto, Shigetoshi; Kayama, Naohiro; Kajiwara, Ikuo; Iguchi, Yoichi; Sakaguchi, Kimiko; Hama, Kazuaki; Yo, Ikuko; Tsutsui, Hiroko; Nishi, Fusako; and Fujii, Setsuro, 3,824,267.

Nishikawa, Tatsuo: *See—*
Murata, Minoru; Nishikawa, Tatsuo; and Hanagata, Takayoshi, 3,823,808.

Nissan Motor Company, Limited: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,823,622.

Nix, William R. Method for cutting openings in paneling or the like. 3,823,754, Cl. 144-323.000.

NL Industries, Inc.: *See—*
White, Edward L.; and Augustyn, Edward J., 3,824,202.

Noack, Dieter; and Marin, Heiner, to Siemens Aktiengesellschaft. High-voltage electric circuit breaker. 3,824,361, Cl. 200-148.00f.

Noca, Joseph A.: *See—*
Seymour, Samuel L.; and Noca, Joseph A., 3,824,090.

Nolan, Robert W. Anti-theft device for bicycles and the like. 3,824,541, Cl. 340-65.000.

Noltingk, Bernard Edward; and Robinson, Norman Edgar, to Central Electricity Generating Board. Methods of and apparatus for flame monitoring. 3,824,391, Cl. 250-208.000.

Nomoto, Yutaka: *See—*
Kakishima, Ryoichi; and Nomoto, Yutaka, 3,823,993.

Nomura, Katsuhiko: *See—*
Uno, Naoyuki; and Nomura, Katsuhiko, 3,824,612.

Noppel, Alban: *See—*
Sellmaier, Alfons, deceased; Noppel, Alban; and Sippel, Gunter, 3,823,569.

Nordell, Randy J., to Time Commercial Financing Corporation. Hydraulic pump and valve unit. 3,824,043, Cl. 417-440.000.

Norman, Sivert; and Syren, Jan, to Allmanna Svenska Elektriska Aktiebolaget. De-energized tap changer for transformers with polyphase sliding contact assembly. 3,824,355, Cl. 200-16.00f.

North American Car Corporation: *See—*
Dupre, Barry E., 3,823,674.

North American Rockwell Corporation: *See—*
Archer, John L.; Tocci, Leonard R.; and Chen, Thomas T., 3,824,565.

Northern Fibre Products Company: *See—*
Ambrose, Jere B., 3,823,429.

Norton Company: *See—*
Christian, Warren E., 3,823,516.
Cocs, Loring, Jr., 3,823,515.

Norwood Marking & Equipment Co., Inc.: *See—*
Shenoha, James L., 3,823,664.

Notvest, Kenneth R., to Trodyne Corporation. Acoustic emission spot welding controller. 3,824,377, Cl. 235-92.0pd.

Nu-Air Humidifier Corporation: *See—*
Bracich, Louis A., 3,823,926.

Nusbaum, Milton S.: *See—*
Remaly, Robert F.; Nusbaum, Milton S.; Johnson, Kenneth G.; and Levine, Seymour, 3,823,668.

Nutter, Benjamin P., to Schlumberger Technology Corporation. Pressure controlled drill stem tester with reversing valve. 3,823,773, Cl. 166-.500.

N.V. Industrieele Handelscombinatie Holland: *See—*
Robertson, Carl David, 3,823,495.

N.V. Optische Industrie De Oude Delft: *See—*
Versteeg, Frits Johan, 3,823,999.
Obayashi, Nobuharu; and Sakashita, Tetsuzi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument capable of transposing. 3,824,325, Cl. 84-1.010.
Obayashi, Nobuharu, to Kabushiki Kaisha Kawai Gakki Seisakusho. Vibrato signal generating apparatus for an electronic musical instrument. 3,824,326, Cl. 84-1.250.
Oberkirch, Wolfgang: *See—*
Gunther, Peter; Oberkirch, Wolfgang; Pampus, Gottfried; Haas, Friedrich; and Marwede, Gunter, 3,824,226.
O'Brien, Francis E.: *See—*
Litz, Donald C.; and O'Brien, Francis E., 3,823,599.
O'Brien, Michael; and West, Clinton L., to University of California, The Regents of, The. Sampler for bulk grapes. 3,823,615, Cl. 73-425.200.
Oce-vander Grinten N.V.: *See—*
Fava, Ermenegildo; and Sibilia, Ermanno, 3,823,614.
Ochi, Shikanosuke; and Yasuda, Norio, to Kabushiki Kaisha Sega Enterprises. Diversified motion device in a steering game amusement machine. 3,823,941, Cl. 273-86.00b.
Odawara, Yohji: *See—*
Iijima, Tokuji; Odawara, Yohji; Yamaguchi, Tetsuo; and Yahagi, Hayao, 3,824,151.
Oehler, Kenneth L., to Oehler Research Incorporated. Inductance type velocity measuring apparatus. 3,824,463, Cl. 324-179.000.
Oehler Research Incorporated: *See—*
Oehler, Kenneth L., 3,824,463.
Offereins, Rienk Pieter, to Hollandse Signaalapparaten B.V. Apparatus for determining the momentary tilt of a vehicle or craft. 3,824,386, Cl. 235-150.270.
Ogilvie, Martin Bruce, to Girling Limited. Hydraulic assemblies. 3,823,651, Cl. 92-2.000.
Ohkubo, Hachiro, to Kinki Printing Company Limited. Container with a catch for pressing and opening a lid. 3,823,864, Cl. 229-19.000.
Ohno, Isamu, to Yokogawa Electric Works, Ltd. Signal magnitude display device for converting an input electric signal into a visual display. 3,824,581, Cl. 340-324.00r.
Ohta, Kazuo; and Sawada, Seiji, to Nippon Steel Corporation and Nihon Architects Engineer & Consultant Inc. Steel structure for prefabricated buildings. 3,823,520, Cl. 52-73.000.
Ohtsuka, Kunio: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,823,622.
Ohya, Kazuo: *See—*
Horii, Kazuo; Ohya, Kazuo; Zama, Matuo; and Takashina, Hiroyuki, 3,824,521.
Ojha, Narayanlal D.: *See—*
Tomalia, Donald A.; Brewbaker, James L.; and Ojha, Narayanlal D., 3,824,269.
Okada, Goro: *See—*
Kobayashi, Hiroshi; and Okada, Goro, 3,824,068.
Okazaki, Nobuo: *See—*
Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, 3,823,622.
Okumura, Takatoshi: *See—*
Tomisawa, Norio; Uchiyama, Yasuji; and Okumura, Takatoshi, 3,824,379.
Okuno, Yositosi: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami, 3,824,306.
Olier, Claude; and David, Guy Albert Jules, to U.S. Philips Corporation. System for the transmission of data signals by linear frequency modulation employing circuit in a receiver tuned to a central frequency. 3,824,466, Cl. 325-30.000.
Olin Corporation: *See—*
Pryor, Michael J.; Shapiro, Stanley; and Lanam, Richard D., 3,824,135.
Ono, Mitsuaki: *See—*
Kobayashi, Fukashi; Ono, Mitsuaki; Yatsugake, Masahiko; and Fukushima, Yukihiro, 3,824,617.
Ono Pharmaceutical Co., Ltd.: *See—*
Ito, Hiroyuki; Sasaki, Yutaro; Miyamoto, Shigetoshi; Kayama, Naohiro; Kajiwara, Ikuo; Iguchi, Yoichi; Sakaguchi, Kimiko; Hama, Kazuaki; Yo, Ikuko; Tsutsui, Hiroko; Nishi, Fusako; and Fujii, Setsuro, 3,824,267.
Ooishi, Tadashi: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami, 3,824,306.
Orange Products, Inc.: *See—*
Gentile, Charles J., 3,823,940.
Orosz, Ivan: *See—*
Muranyi, Istvan; Voros, Attila; Varga, Janos; and Orosz, Ivan, 3,824,066.
Orr, Howard S.: *See—*
Bijasiewicz, Tadeusz M.; Orr, Howard S.; and Vierling, Donald E., 3,823,568.
Ort, Wolfgang; and Reibl, Michael, to Eastman Kodak Company. Camera adapted for percussively ignitable flashlamps. 3,824,610, Cl. 354-139.000.
Ortheil, Hans, to Kane and Company. Liquid ammonia-caustic dye solution and dyeing therewith. 3,824,076, Cl. 8-82.000.
Osakeyhtio, A. Ahlstrom: *See—*
Navalainen, Pentti, 3,824,152.
Osiko, Vyacheslav Vasilievich: *See—*
Alexandrov, Vladimir Ilich; Osiko, Vyacheslav Vasilievich; and Tatarintsev, Vladimir Mikhailovich, 3,824,302.
Osterreichische Stickstoffwerke Aktiengesellschaft: *See—*
Pelz, Alfred; and Jilek, Franz, 3,824,110.
Ostrowski, Piotr, to Girling Limited. Plural self-energizing spreading disc brake assembly. 3,823,798, Cl. 188-71.400.
Oswald, Richard Alan; and Stark, Bernard Peter, to Ciba-Geigy Limited. Sulphur-containing epoxides. 3,824,259, Cl. 260-348.00r.
Oswin, Harry G.; and Blurton, Keith F., to Energetics Science, Inc. Gas detecting and measuring device. 3,824,167, Cl. 204-195.00r.
Oswin, Harry G.; and Blurton, Keith F., to Energetics Science, Inc. Gas detecting and quantitative measuring device. 3,824,168, Cl. 204-195.00r.
Otto, C., Dr., & Comp., G.m.b.H.: *See—*
Drebes, Friedrich-Wilhelm, 3,824,070.
Outboard Marine Corporation: *See—*
DuBois, Chester; and Hunt, Paul R., 3,823,733.
Owen, Dave L., to Grace, W. R., & Co. Vacuum nozzle device. 3,823,750, Cl. 141-65.000.
Owens-Corning Fiberglas Corporation: *See—*
Garst, John M., 3,824,387.
Owens-Illinois, Inc.: *See—*
Cochran, Ronald; Federle, August J.; and Marsh, Samuel W., III, 3,823,822.
Mills, Harry N.; and Roll, Henry E. (said Mills, Harry N. assor to), 3,823,920.
Perry, Jack I., 3,823,860.
Ozaki, Toshiaki: *See—*
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami, 3,824,306.
Pabon, Hendrik Jacob Johannes: *See—*
Heslinga, Lammert; Pabon, Hendrik Jacob Johannes; and van Dorp, David Adrian, 3,824,262.
Pak Construction AB: *See—*
Tibbling, Kurt Eskil, 3,824,392.
Palka, Frank M.: *See—*
Ashley, James R.; and Palka, Frank M., 3,824,485.
Palm, Christoph: *See—*
Matthias, Guenther; Palm, Christoph; and Schulz, Gerhard, 3,824,287.
Palmieri, Joseph Michael: *See—*
Klein, Keith William; and Palmieri, Joseph Michael, 3,824,555.
Pampus, Gottfried: *See—*
Gunther, Peter; Oberkirch, Wolfgang; Pampus, Gottfried; Haas, Friedrich; and Marwede, Gunter, 3,824,226.
Panaccione, Sergio, to Sigma-Tau Industrie Farmaceutiche Riunite S.p.A. Automatically positionable gate assembly. 3,823,510, Cl. 49-247.000.
Pantermuehl, Pontie J.; and Munsch, George F., to Southern Gas Association, mesne. Torque transducer. 3,823,608, Cl. 73-136.00a.
Pappalardo, Romano G.; and Ahmed, Samir A., to GTE Laboratories Incorporated. Electric discharge lamp. 3,824,423, Cl. 313-225.000.
Parel, Jean-Marie, to University of Melbourne, The. Cryogenic apparatus. 3,823,575, Cl. 62-514.000.
Parenti, Frank V.; Abney, Paul C.; and Spaleny, George R., to Standard Register Company, The. Production of multiple-copy business forms. 3,823,934, Cl. 270-18.000.
Parfitt, Maurice; and Langley, Keith William, to Westinghouse Brake and Signal Company, Limited. Braking systems. 3,823,984, Cl. 303-3.000.
Park-Ohio Industries, Inc.: *See—*
Balzer, Norbert R.; and Enk, Larry G., 3,824,367.
Budzinski, Roger R., 3,823,927.
Cachat, John F., 3,824,364.
Parke, David & Company: *See—*
Controulis, John; Larsen, Kenneth N.; and Wheeler, Larry M., 3,823,816.
Parker, Charles K.: *See—*
Fries, Bernard A.; and Parker, Charles K., 3,824,395.
Parker, Peter Harry: *See—*
Penny, Robert Noel; Parker, Peter Harry; and Silverstone, Calvin Eric, 3,824,036.
Parliment, Thomas H.; Epstein, Martin P.; Clinton, William P.; Scarpellino, Richard; and Soakup, Robert J., to General Foods Corporation. Selected mercaptopyrazines as flavoring agents. 3,824,321, Cl. 426-65.000.
Parris, William J., to Westinghouse Electric Corporation. Microwave filter. 3,824,504, Cl. 333-73.00w.
Parsons, Roger C.; and Yang, Kang, to Continental Oil Company. Method for upgrading coal gasification products. 3,823,775, Cl. 166-260.000.
Parsons, William F.: *See—*
Carnall, Edward, Jr.; and Parsons, William F., 3,824,301.
Patent Management, Inc.: *See—*
Latash, Jury Vadimovich; Medovan, Boris Izrailevich; Leibenzow, Semen Abramovich; and Petrovich, Gary, 3,823,759.
Patentanstalt Fur Neue Baustoffe: *See—*

Benedikter, Karl, 3,823,919.

Patil, Suhas S., to Massachusetts Institute of Technology. Arbiter circuits. 3,824,409, Cl. 307-232.000.

Patmore, James R.; and Sidoti, Joseph E., to Electronic Associates, Inc. Air turbulence simulation apparatus. 3,823,871, Cl. 235-197.000.

Patmore, James R.; and Sidoti, Joseph E., to Electronic Associates, Inc. Localized simulator apparatus. 3,824,324, Cl. 35-10.200.

Patnode, LeRoy K. Folding camper. 3,823,974, Cl. 296-23.0mc.

Patton, John T., Jr.: *See—*
Narayan, Thirumurti L.; Cenker, Moses; Kan, Peter T.; and Patton, John T., Jr., 3,824,239.
Narayan, Thirumurti L.; Cenker, Moses; Kan, Peter T.; and Patton, John T., Jr., 3,824,240.

Pawson, Beverly Ann; and Saucy, Gabriel, to Hoffmann-La Roche Inc. 4-(3-Hydroxy-1,5-dimethylhex-1-yl) -1-cyclohexene-1-carboxaldehyde. 3,824,291, Cl. 260-598.000.

Pease, Logan L., to Eaton Corporation, mesne. Retroreflective fine position sensing means. 3,824,020, Cl. 356-152.000.

Pedersen, Haakon O., to De Laval Turbine, Inc. Improved pressure vented wear ring assembly for use in rotary machinery. 3,823,950, Cl. 277-70.000.

Pelz, Alfred; and Jilek, Franz, to Osterreichische Stickstoffwerke Aktiengesellschaft. Additive composition. 3,824,110, Cl. 106-284.000.

Pemberton, Denver L., to Anaconda Company, The, mesne. Method of making compact conductor. 3,823,542, Cl. 57-161.000.

Penaloza, Arturo Castrejon. Cinematographic system. 3,823,517, Cl. 52-6.000.

Penland, William D.: *See—*
Edwards, Joseph L.; Penland, William D.; and Warren, James B., 3,824,358.

Penn-Olin Chemical Company: *See—*
Hodges, Jimmie Ray, 3,824,172.

Penn's Woods Products, Inc.: *See—*
Piper, Frank R., 3,823,418.

Penny, Robert Noel; Parker, Peter Harry; and Silverstone, Calvin Eric, to British Leyland Truck and Bus Division Limited. Gas turbine rotors. 3,824,036, Cl. 416-95.000.

Peripheral Systems Corporation: *See—*
Milligan, Lee J., 3,823,945.

Perkin-Elmer Corporation, The: *See—*
Crane, Robert Jr., 3,824,018.
Magyar, John J., 3,824,390.

Perma-Blade, Inc.: *See—*
Hauke, Gary F., 3,823,437.

Perry, Jack I., to Owens-Illinois, Inc. Web guiding apparatus. 3,823,860, Cl. 226-199.000.

Perry, Walter Merton; and Perry, Walter Scott. By-pass fiber collection system. 3,824,086, Cl. 65-9-.

Perry, Walter Scott: *See—*
Perry, Walter Merton; and Perry, Walter Scott, 3,824,086.

Personal Communications, Inc.: *See—*
Yevick, George J., 3,824,609.

Petering, Harold G.: *See—*
Murray, Maxton F.; and Petering, Harold G., 3,824,276.

Peterli, Hans Jakob: *See—*
Kirchmayr, Rudolf; Peterli, Hans Jakob; and Heller, Hansjorg, 3,824,273.

Peterson, Adrian J., to Black, Sivalls & Bryson, Inc. Process for simultaneously removing adsorbable components from two liquid streams. 3,824,182, Cl. 208-188.000.

Peterson, Howard H.: *See—*
Frederick, John E.; and Peterson, Howard H., 3,823,894.

Peterson, John A.: *See—*
Minklei, Alfred O.; and Peterson, John A., 3,824,124.

Peterson, William B. Wheel construction. 3,823,983, Cl. 301-43.000.

Petit, Pierre; and Verjux, Pierre, to Institut De Recherches De La Siderurgie Francaise (Irsid). Method of, and apparatus for, the optical measurement of the speed at a moving product. 3,824,015, Cl. 356-28.000.

Petitjean, Raymond: *See—*
Demarcq, Michel; and Petitjean, Raymond, 3,824,205.

Petrovich, Gary: *See—*
Latash, Jury Vadimovich; Medovan, Boris Izrailevich; Leibenzow, Semen Abramovich; and Petrovich, Gary, 3,823,759.

Pettit, Donald: *See—*
Harlan, James T., Jr.; Pettit, Donald; Blackwell, Frederick B.; and Carter, Alan R., 3,824,149.

Petzing, Betty H.: *See—*
Petzing, Robert C.; and Petzing, Betty H., 3,823,839.

Petzing, Robert C.; and Petzing, Betty H. Cartop carrier elevator. 3,823,839, Cl. 214-450.000.

Pevrick Engineering Co., Inc.: *See—*
Hedrick, John R., 3,823,477.

Pfaff Haushaltmaschinen GmbH: *See—*
Meier, Gunter, 3,823,679.

Pfizer Inc.: *See—*
Blackwood, Robert K.; and Stephens, Charles R., Jr., 3,824,285.
Kasubick, Robert V., 3,824,275.

Pflasterer, Peter W., to Tennelec, Inc. Scanning radio receiver. 3,824,475, Cl. 325-470.000.

Pflaum, Eckhard: *See—*
Slamecka, Ernst; Martschini, Karl; Pflaum, Eckhard; and Schramm, Heinz-Helmut, 3,824,360.

Philco-Ford Corporation: *See—*
Fox, Ralph W., 3,824,376.

Phillips Petroleum Company: *See—*
Pitzer, Emory W., 3,824,195.

Piconics, Inc.: *See—*
Slenker, Stephen A., 3,824,518.

Piechocki, Benjamin, to Western Electric Company, Incorporated. Compensating base for lead-frame bonding. 3,823,863, Cl. 228-6.000.

Pierce, Zona R.; Haist, Grant M.; Staples, Jon T.; and Pupo, David A., to Eastman Kodak Company. Photographic element, composition and process having an S-carbamoyl stabilizer. 3,824,103, Cl. 96-109.000.

Pilkington Brothers Limited: *See—*
Bryan, John; and Hart, Frederick Harry, 3,824,088.

Pimiskern, Klaus: *See—*
Hepp, Wolfgang; Pimiskern, Klaus; and Herbert, Werner, 3,824,369.

Pinchot, Louis. Toaster-broiler stacking unit. 3,823,658, Cl. 99-340.000.

Pinckaers, B. Hubert, to Honeywell Inc. Electronic stroke adjust for motor control. 3,824,439, Cl. 318-667.000.

Pioch, Robert J. Intrusion alarm system activated by touch sensitive door knob. 3,824,576, Cl. 340-258.00c.

Pioneer Electronic Corporation: *See—*
Murai, Masayuki, 3,824,618.

Piotrowski, Jan: *See—*
Wisniewski, Wladyslaw; Piotrowski, Jan; and Szeler, Zbigniew W., 3,824,045.

Piper, Frank R., to Penn's Woods Products, Inc. Camouflage apparatus. 3,823,418, Cl. 2-206.000.

Pitney-Bowes, Inc.: *See—*
Hanson, Walter J., 3,823,666.

Pittet, Gilbert H., to Lever Brothers Company. Aerosol hydraulic drain opener. 3,823,427, Cl. 4-255.000.

Pittsburgh & Midway Coal Mining Co., The: *See—*
Howland, John W., 3,823,782.

Pitzer, Emory W., to Phillips Petroleum Company. Oxidative dehydrogenation catalyst. 3,824,195, Cl. 252-437.000.

Plat-General, Inc.: *See—*
Cheney, Oliver F.; and Dobo, Tamas, 3,823,836.

Plempel, Manfred: *See—*
Regel, Erik; Heinz, Karl; and Plempel, Manfred, 3,824,310.

Plessey Handel und Investments A.G.: *See—*
Styan, Peter Ormonde; and Mason, Stuart John, 3,824,549.

Pogainis, Edmunds M.: *See—*
Erickson, Allen H.; Pogainis, Edmunds M.; and Teletzke, Gerald H., 3,824,186.

Poggie, Joseph L. Apparatus and process for reducing waste organic materials into clean, sterilized powder, meal or flakes. 3,823,877, Cl. 241-19.000.

Pohl, James E.: *See—*
Sullivan, Dean R.; and Pohl, James E., 3,824,548.

Pohlman, Reimar: *See—*
Pohlman, Reimar; and Cichos, Manfred, 3,823,717.

Pohlman, Reimar; and Cichos, Manfred, to Pohlman, Reimar. Apparatus for disintegrating concretions in body cavities of living organisms by means of an ultrasonic probe. 3,823,717, Cl. 128-305.000.

Polaroid Corporation: *See—*
Land, Edwin H.; and Cronin, David V., 3,824,611.
Stella, Joseph A., 3,824,007.

Polese, James P.: *See—*
McNees, Sterling G.; and Polese, James P., 3,824,424.

Polgar, Michael S.: *See—*
Majkrzak, Charles P.; and Polgar, Michael S., 3,824,600.

Politz, William E., to Young, Stephen A. Escutcheon with positioning means. 3,823,964, Cl. 285-46.000.

Pollinger, Hans; and Falke, Erich, to Knorr-Bremae GmbH. Braking device for railroad vehicles. 3,823,986, Cl. 303-21.00f.

Pollkotter, Gunter: *See—*
Schroder, Paul; and Pollkotter, Gunter, 3,823,591.

Polsak, Edwin Mark, to Combustion Engineering, Inc. Gravity flow incinerator. 3,823,677, Cl. 110-8.00c.

Ponemone, Seymour J.: *See—*
Shamash, Maurice B.; Konsowski, Stephen G.; Lindberg, Frank A.; and Ponemone, Seymour J., 3,823,467.

Portage Machine Company: *See—*
Schiler, Frederick S., 3,823,482.

Potter Instrument Company, Inc.: *See—*
Gucker, George C., 3,824,623.

Potter, Roanld Anthony. Wine-making apparatus. 3,823,655, Cl. 99-277.000.

Potts, Edwin M. Automatic film feed device. 3,823,890, Cl. 242-55.180.

Poundstone, William N.: *See—*
Haworth, Gordon R.; Edmond, Tibor O.; and Poundstone, William N., 3,823,787.

Power, Basil Dixon, to British Oxygen Company, Limited, The. Sublimable targets. 3,824,039, Cl. 147-48.000.

PPG Industries, Inc.: *See—*
Capellman, John J.; Stultz, James C.; and Cooper, Joseph E., 3,824,105.
Jerabek, Robert D., 3,824,111.
Seymour, Samuel L.; and Noca, Joseph A., 3,824,090.

Pratt, Henry, Company: *See—*
Kurkjian, Gregory A., Jr., 3,823,912.

Kurkjian, Gregory A., Jr., 3,823,913.
Preikschat, Fritz K. Electrical impedance measuring apparatus. 3,824,461, Cl. 324-61.00r.
Presin Company, Inc.: *See*—
Johnson, George W.; and Teichner, Maurice D., 3,824,378.
Pressman, Gerald L., to Electroprint, Inc. Electrostatic modulator for controlling flow of charged particles. 3,824,010, Cl. 355-3.00r.
Prezewowsky, Klaus: *See*—
Laurent, Henry; Wiechert, Rudolf; Prezewowsky, Klaus; Hofmeister, Helmut; Gerhards, Erich; Kolb, Karl Heinz; and Mengel, Klaus, 3,824,260.
Probst, Timothy F. Means for automatically dispensing preselected volumes of a beverage. 3,823,846, Cl. 222-70.000.
Process for the preparation of 2-substituted-1, 3,4-thiadiazole-5-thiols: *See*—
Huffman, George W.; and Molloy, Bryan B., 3,824,246.
Procter & Gamble Company, The: *See*—
Curry, John Downing, 3,824,307.
Produits Chimiques Ugine Kuhlmann: *See*—
Demarcq, Michel; and Petitjean, Raymond, 3,824,205.
Prokhorov, Vladimir Alexandrovich: *See*—
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Prugnaud, Claude J. P.: *See*—
Sebille, Christian A.; and Prugnaud, Claude J. P., 3,824,435.
Pryor, Michael J.; Shapiro, Stanley; and Lanam, Richard D., to Olin Corporation. Copper base alloys. 3,824,135, Cl. 148-32.500.
Pulitzer, Wolfgang: *See*—
Karobath, Ernst; Rippel, Leopold; Schmidinger, Hans; and Pulitzer, Wolfgang, 3,824,138.
Punker GmbH Apparatebau und Warmetechnik: *See*—
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Pupo, David A.: *See*—
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Pusch, Gunter; and Walz, Dieter, to Chemische Fabrik Pfersee GmbH. Process for manufacturing water soluble alkoxylated methylol melamines. 3,824,232, Cl. 260-249.600.
Pustka, Karel: *See*—
Fliesser, Engelbert; Pustka, Karel; and Wagensonner, Eduard, 3,824,605.
Pye Limited: *See*—
Hart, George Henry, 3,824,335.
Pye, Michael Richard, to Texas Instruments, Incorporated. TRF radio receiver with enhanced Q aerial tuned circuit and frequency response compensation in the low frequency amplifier. 3,824,473, Cl. 325-375.000.
Pyhalto, Pekka Juhani: *See*—
Suominen, Heikki Samuli; and Pyhalto, Pekka Juhani, 3,823,630.
Pyler, Richard E.: *See*—
Teng, James; Stubits, Marcella C.; Pyler, Richard E.; and Lucas, James M., 3,824,085.
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Q-TV, Inc.: *See*—
Eisenberg, Alvin S., 3,824,339.
Quate, Calvin F., to Leland Stanford Junior University, The Board of Trustees of. Method of and apparatus for analog to digital conversion utilizing acoustic waves. 3,824,586, Cl. 340-347.0ad.
Querci, Carlo; and Zucchinali, Carlo, to Italsider S.p.A. Connection device for dipper or ripper teeth, particularly for two-piece teeth of a dipper. 3,823,496, Cl. 37-142.00a.
Quist, Frederick Fenn, Jr., to International Business Machines Corporation. Record card receiving and feeding apparatus. 3,823,936, Cl. 271-118.000.
Racine Railroad Products, Inc.: *See*—
McIlrath, William P.; and Holstein, Frederick W., 3,823,455.
Radford, David L., to Vital Assists, Inc. Membrane support system. 3,823,827, Cl. 210-238.000.
Raffenberg, Hermann-Josef, to BASF Wyandotte Corporation. Method for continuously producing tubular bodies of foamed material. 3,824,300, Cl. 264-47.000.
Ragg, Pudens Leonard, to Imperial Chemical Industries Limited. Metallated polymers. 3,824,221, Cl. 260-80.0ps.
Rainey, Donald B., to Magnum Automative Equipment, Inc. Mounting head for a tire tool. 3,823,756, Cl. 157-1.300.
Ramdohr, Detlef: *See*—
Schmitz, Helmut; and Ramdohr, Detlef, 3,823,605.
Ramer, Leonard. Refuse container. 3,823,972, Cl. 294-73.000.
Ramer, Leonard. Refuse container for rear end loader. 3,823,973, Cl. 294-73.000.
Rawls, John L., Jr., to Sperry Rand Corporation. Suppressor electrode for depressed electron beam collector. 3,824,425, Cl. 315-3.500.
Ray, Elbert L.: *See*—
Brown, Barry M.; and Ray, Elbert L., 3,824,299.
Ray, McNally S. Water hose attachment holder. 3,823,905, Cl. 248-87.000.
Ray, McNally S. Water hose attachment holder. 38,238,905, Cl. 248-87.000.
Raytheon Company: *See*—
Levitt, Barry N.; and Shorey, Francis L., 3,824,455.
Walsh, George M., 3,824,531.
Razavi, Djavad, to Ugine Kuhlmann. SO_2 SH dyes in dry heat dyeing. 3,824,077, Cl. 8-37.000.
RCA Corporation: *See*—
Christensen, Roy Martin; Gibson, James John; and Limberg, Allen Le Roy, 3,824,342.
Finkelstein, Morris Baer, 3,823,896.
Hegarty, Brian Anthony; and Trevail, Lewis Herbert, 3,823,469.
Johnson, Miles Carrington; and Clock, Donald Page, 3,824,450.
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Vieland, Leon Joseph; and Wicklund, Arnold Wilbert, 3,824,082.
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Reed, Lloyd Edward: *See*—
Speer, Walter Franklin; and Reed, Lloyd Edward, 3,824,507.
Reedy, Wayne R.; and Russ, Edward F., to Carrier Corporation. Clamping tool. 3,823,862, Cl. 228-4.000.
Rees, Richard W.; and Chai, Sie Yearl, to American Home Products Corporation. Decapeptide [D-Phe]^2 analog of luteinizing hormone releasing factor and intermediates thereof. 3,824,227, Cl. 260-112.500.
Regel, Erik; Heinz, Karl; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. Bis-imidazoly L-bisphenylmethane, salts therof as antifugal agents. 3,824,310, Cl. 424-273.000.
Regie Nationale des Usines Renault: *See*—
Broyer, Robert, 3,823,618.
Regnier, Gilbert; Canevari, Roger; and Le Douarec, Jean-Claude, to Societe en nom Collectif Science Union and Cie Societe Francaise de Recherche. Acylamino tetrazoles. 3,824,249, Cl. 260-308.00d.
Rehhoff, Henning: *See*—
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Reibl, Michael: *See*—
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Reifenhauser KG: *See*—
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Reinhardt, Hans: *See*—
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Remaly, Robert F.; Nusbaum, Milton S.; Johnson, Kenneth G.; and Levine, Seymour, to United States of America, Air Force. Duplex combustible cartridge case. 3,823,668, Cl. 102-38.000.
Rene Villasenor de Rivas: *See*—
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Research Corporation: *See*—
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Lovold, Clifford E., 3,824,071.
Reynolds Metal Company: *See*—
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Rheem International, Inc., mesne: *See*—
Daugirda, Paul G.; and Smith, Leslie D., 3,823,704.
Rhodes, Keith H.; and Schlapman, William J., to Case, J. I., Company. Sweeper assembly. 3,823,435, Cl. 15-79.000.
Rhone-Poulenc-Textile: *See*—
Sartori, Roland, 3,823,884.
Riba, Morris. Universal time providing clock. 3,823,548, Cl. 58-44.000.
Riccar Sewing Machine Co., Ltd.: *See*—
Kakishima, Ryoichi; and Nomoto, Yutaka, 3,823,993.
Rich, William, III. Warning device for use with boats. 3,824,575, Cl. 340-241.000.

Richards, Dennis Maunder, to English Clays Lovering Pochin & Company Limited. Roads, airfield runways and the like. 3,824,109, Cl. 106-281.00r.
Richards, Edward M., to Redactron Corporation. Typewriter controlled by a record medium. 3,823,805, Cl. 197-19.000.
Richards, John: *See*—
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Richards Manufacturing Company: *See*—
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Richards, Ronald A., 20% interest to Lee, Raymond, Organization, Inc., The. Grass catcher for lawn trimming shears. 3,823,472, Cl. 30-131.000.
Richert, Karl Hartwig: *See*—
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Richison, Eugene M.; and Richison, Ethel M., to Conklin, Thomas. Power-operated wheel chair. 3,823,790, Cl. 180-6.700.
Ricoh Co., Ltd.: *See*—
Hirafuji, Van, 3,823,937.
Suzuki, Takami, 3,823,807.
Rid-O-Ray, Inc.: *See*—
Iannini, Robert E., 3,823,506.
Riehl Electronics Corporation: *See*—
Riehl, Roger W., 3,823,551.
Riehl, Roger W., to Riehl Electronics Corporation. Solid state electronic timepiece. 3,823,551, Cl. 58-23.00r.
Rieter Machine Works, Ltd.: *See*—
Mandl, Gerhard, 3,823,540.
Riggle, William Eugene, to RCA Corporation. Method of aligning a two-capillary tube gas discharge device. 3,824,089, Cl. 65-109.000.
Rilco Maschinenfabrik GmbH & Co. KG: *See*—
Hirn, Helmut; and Bott, Wolfgang, 3,823,741.
Riley, Terence James, to Bell Telephone Laboratories Incorporated. Negative resistance devices. 3,824,490, Cl. 331-107.00r.
Rimlinger, Donald C.: *See*—
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Ring, Curtis Phillip; and Hunck, Billie Gene, to Deere & Company. Destroking of hydrostatic drive motors. 3,823,650, Cl. 91-497.000.
Rippel, Leopold: *See*—
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Risberg, Robert L., to Cutler-Hammer, Inc. Direct current signal isolator providing a close replica of wave shape. 3,824,407, Cl. 307-88.0mp.
Ristenbatt, Marlin Philip. Comprehensive automatic vehicle communication, paging, and position location system. 3,824,469, Cl. 325-39.000.
Ritter, Gerhard: *See*—
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 3,823,835.
Ritter, Josef; Gott, Hans; Ritter, Klaus; Gamillscheg, Otto; Boyer, Wilhelm; and Ritter, Gerhard, 3,823,749.
Ritter, Josef: *See*—
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Ritter, Josef; Gott, Hans; Ritter, Klaus; Gamillscheg, Otto; Boyer, Wilhelm; and Ritter, Gerhard, to EVG Entwicklungs-u. Verwertungsgesellschaft m.b.H. Bending machine for wire or strip. 3,823,749, Cl. 140-105.000.
Ritter, Klaus: *See*—
Gott, Hans; Ritter, Josef; Ritter, Klaus; and Ritter, Gerhard, 3,823,835.
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Rittmannsberger, Norbert: *See*—
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Rivers, Anna Belle, to Textron Inc. Adhesive slide fastener installation. 3,823,445, Cl. 24-205.10r.
Roberts, Charles G. Internal combustion engine manifold and fluid flow configuration. 3,823,702, Cl. 123-188.00m.
Roberts, Harry W., to Pylon Manufacturing Corporation. Wiper blade mount. 3,823,436, Cl. 15-250.320.
Roberts, John D., to Celanese Corporation. Multi-purpose fluid yarn treating apparatus. 3,823,448, Cl. 28-1.400.
Roberts, Lincoln Edwin; and Shoemaker, John Robert, to AMP Incorporated. Installation of electrical connectors on wires intermediate the ends thereof. 3,824,530, Cl. 339-99.00r.
Robertson, Carl David, to N.V. Industriecle Handelscombinatie Holland. Rotatably driven cutter for a suction dredger. 3,823,495, Cl. 37-66.000.
Robins, Roland K.: *See*—
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Rod, Trygve R.; Ernst, Richard J.; and Davis, Robert A., to Xerox Corporation. Spring loaded rotary knife. 3,823,634, Cl. 83-346.000.
Roeder & Spengler: *See*—
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Roefs, Herman Albert Joannes: *See*—
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Rogers, Gerald L., to Chemetron Corporation. Base assembly for swivel lamp. 3,823,906, Cl. 248-279.000.
Rohm and Haas Company: *See*—
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Rohr, Wolfgang: *See*—
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Rometsch, Werner: *See*—
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Roos, Yngve Gustav Sigvard, to AR Ventilation AB. Fluid distributing device. 3,823,653, Cl. 98-40.00b.
Rose, Rolland H. Fastening device. 3,823,526, Cl. 52-758.00f.
Rosenberg, Arthur, to Creative Concepts Corporation. Cosmetic mirror. 3,824,001, Cl. 350-305.000.
Rosenberg, William E., to Hull, R. O., & Company, Inc. Composition of baths for electrodeposition of bright zinc. 3,824,158, Cl. 204-55.00r.
Ross, William C., to Consolidated Educational Publishing, Inc. Self-adjusting plural blade cutting roller with cushioned anvil roller. 3,823,633, Cl. 83-346.000.
Rossaert, Edgard Emile Charles, to U.S. Philips Corporation. Colour television display apparatus provided with a cathode-ray tube. 3,824,426, Cl. 315-27.0gd.
Rossier, Dominique: *See*—
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Rossignol, Pierre: *See*—
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Roth, Albrecht: *See*—
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Rothenberg, Carl, to Sperry Rand Corporation. Transmission line coupling and combining network for high frequency antenna array. 3,824,500, Cl. 333-6.000.
Rotier, Donald J.; and Sawamura, Robert T., to Honeywell Inc. Pulse detection systems. 3,824,464, Cl. 324-186.000.
Rover, Ralph R., Jr., to Bendix Corporation, The. Head-up display apparatus including means for displaying three dimensional aircraft vertical path line. 3,824,535, Cl. 340-27.0na.
Roze, Albert: *See*—
Fencl, Vernon R.; Roze, Albert; and Naureckas, Edward M., 3,823,883.
Rudolph, Hans; Heine, Hans-Georg; Fuhr, Karl; and Schnell, Hermann, to Bayer Aktiengesellschaft. Butyric acid derivatives. 3,824,284, Cl. 260-559.00r.
Rudow, Maurice G.; and Klawans, Warren D., to Davis Instrument Manufacturing Co., Inc. Vane anemometers. 3,823,611, Cl. 73-231.00r.
Ruhland, Alois: *See*—
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Rundell, Herbert A., to Texaco, Inc. Heavy-duty torque coupling. 3,823,607, Cl. 73-136.00a.
Ruscitti, Tomaso, to Coster Tecnologie Speciali S.p.A. Valve for delivering a liquid from an aerosol container. 3,823,849, Cl. 222-96.000.
Russ, Edward F.: *See*—
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Russo, Carmine M. Knitting machine needle devices. 3,823,581, Cl. 66-86.00r.
Rutsch, Peter: *See*—
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Rydberg, Jan Helge Arnold: *See*—
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Rymarchyk, Nicholas M.; and Meinert, Leo L., to Berry Metal Company. Nozzle for fuel and oxygen lance assembly. 3,823,929, Cl. 266-34.001.
Rynberk, Robert W., to Imperial Landscape & Supply Co., Inc. Pool construction. 3,823,690, Cl. 119-5.000.
Rysti, Alpo. Method and device for performing the insertion of piling strips in timber packages. 3,823,834, Cl. 214-6.0dk.
Rystrom, Charles H. Positive displacement liquid pump. 3,824,041, Cl. 417-310.000.
S. A. dite Comsip Automation: *See*—
Sebille, Christian A.; and Prugnaud, Claude J. P., 3,824,435.
S. A. dite Ethylene Plastique: *See*—
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Saint-Gobain Industries: *See—*
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Sakaguchi, Kimiko: *See—*
Ito, Hiroyuki; Sasaki, Yutaro; Miyamoto, Shigetoshi; Kayama, Naohiro; Kajiwara, Ikuo; Iguchi, Yoichi; Sakaguchi, Kimiko; Hama, Kazuaki; Yo, Ikuko; Tsutsui, Hiroko; Nishi, Fusako; and Fujii, Setsuro, 3,824,267.

Sakai, Kenichi; and Sumida, Morimasa, to Mitsui Mining & Smelting Co., Ltd. Method for electrorefining crude copper having high antimony contents. 3,824,162, Cl. 204-108.000.

Sakalay, Fred E., to International Business Machines Corporation. Magnetic domain code repeater. 3,824,567, Cl. 340-174.0tf.

Sakamoto, Eiichi: *See—*
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Sakamoto, Sadao: *See—*
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Sakamoto, Yoichi, to Matsushita Electric Industrial Co. Ltd. Automatic frequency control device. 3,824,474, Cl. 325-420.000.

Sakashita, Tetsuzi: *See—*
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Salvis AG: *See—*
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Houlihan, William J.; and Nadelson, Jeffrey, 3,824,244.

Sandstrom, John W.; and Cloud, Kenneth C., to Integral Systems, Inc. Alignment control system. 3,823,730, Cl. 137-344.000.

Sangster, Frederik Leonard John; and Heijns, Hendrik, to U.S. Philips Corporation. Sensor for converting a physical pattern into an electrical signal as a function of time. 3,824,337, Cl. 178-7.100.

Sano, Kazuya: *See—*
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Sanwald, John W.: *See—*
Smith, Randlow; Strickland, John C.; and Sanwald, John W., 3,824,080.
Smith, Randlow; Strickland, John C.; Sanwald, John W.; and Jones, Henry B., 3,824,081.

Sanyo Electric Co., Ltd.: *See—*
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Sapper, Richard; and Marocco, Sergio, to Fiat Societa per Azioni and Industrie Pirelli S.p.A. Pneumatic shock absorbing bumper. 3,823,969, Cl. 293-71.00p.

Sarabia, Armando Belmares: *See—*
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Sartori, Roland, to Rhone-Poulenc-Textile. Apparatus and method for forming a piecing end for wound yarn. 3,823,884, Cl. 242-18.0pw.

Sasaki, Minoru; and Uozumi, Masana, to Hitachi Maxwll, Ltd. Magnetic recording tape. 3,823,947, Cl. 274-11.00r.

Sasaki, Yutaro: *See—*
Ito, Hiroyuki; Sasaki, Yutaro; Miyamoto, Shigetoshi; Kayama, Naohiro; Kajiwara, Ikuo; Iguchi, Yoichi; Sakaguchi, Kimiko; Hama, Kazuaki; Yo, Ikuko; Tsutsui, Hiroko; Nishi, Fusako; and Fujii, Setsuro, 3,824,267.

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Sato, Hideo: *See—*
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Sato, Shui: *See—*
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Sawada, Seiji: *See—*
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Sawahara, Masao; and Sano, Kazuya, to Fuji Photo Film Co., Ltd. 1-Mesityl-3-substituted pyrazolones as magenta color couplers. 3,824,250, Cl. 260-310.00a.

Sawamura, Robert T.: *See—*
Rotier, Donald J.; and Sawamura, Robert T., 3,824,464.

Sawyer, Kenneth W., to Garrett Corporation, The. Dynamic regenerative heat exchanger. 3,823,766, Cl. 165-1.000.

Saxena, Anand M.: *See—*
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Sayno Electric Co., Ltd.: *See—*
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Scarbel, Marcel P.: *See—*
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Parliment, Thomas H.; Epstein, Martin P.; Clinton, William P.; Scarpellino, Richard; and Soukup, Robert J., 3,824,321.

Scarzello, John F.; and Sery, Robert S. Magnetic bubble resonance sensor. 3,824,573, Cl. 340-174.0rf.

Schafenacker, Ralph, Jr., to Keller Glove Mfg. Company. Flame-resistant conduit covering. 3,823,745, Cl. 138-103.000.

Schantz, Spencer C. Housing for electrical device having conductor openings with strain relief. 3,824,329, Cl. 174-65.00a.

Scharfen, Hans, to Forkardt, Paul, Kommanditgesellschaft. Device for cutting and machining disc-shaped workpieces on both sides thereof. 3,823,627, Cl. 82-2.00a.

Schegolev, Gleb Stepanovich; Tsvetkov, Mikhail Alexeevich; Fasulati, Rady Kirillovich; Budnikov, Sergei Fomich; Bronovsky, Grigory Abramovich; and Granovsky, Semen Abramovich. Control apparatus for hydraulic machines. 3,824,032, Cl. 415-150.000.

Schering Aktiengesellschaft: *See—*
Laurent, Henry; Wiechert, Rudolf; Prezewowsky, Klaus; Hofmeister, Helmut; Gerhards, Erich; Kolb, Karl Heinz; and Mengel, Klaus, 3,824,260.

Schick Incorporated: *See—*
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Schick, Margery L.: *See—*
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Anderson, Bror E.; Schick, Margery L.; and Wedyck, Janis E., 3,824,117.

Schiler, Frederick S., to Portage Machine Company. Inspection machine having right angle probe units. 3,823,482, Cl. 33-169.00r.

Schindele, Alfred; Glaunsinger, Heinz; and Helmert, Jorg. Pattern control mechanism for circular knitting machines. 3,823,579, Cl. 66-50.00r.

Schindler, Roger N., to Eastman Kodak Company. Vessel for quenching cast sheeting. 3,824,049, Cl. 425-71.000.

Schlage Lock Company: *See—*
Elder, George; and Lehnhoff, Hans F., 3,823,596.

Schlapman, William J.: *See—*
Rhodes, Keith H.; and Schlapman, William J., 3,823,435.

Schlicke, Heinz M., to Allen-Bradley Company. High voltage suppressor for transmission lines. 3,824,431, Cl. 317-61.000.

Schlotterhausen, Christian: *See—*
Bardash, Irwin; and Schlotterhausen, Christian, 3,824,502.

Schlumberger Technology Corporation: *See—*
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Schmidinger, Hans: *See—*
Karobath, Ernst; Rippel, Leopold; Schmidinger, Hans; and Pulitzer, Wolfgang, 3,824,138.

Schmidt, Paul Herman: *See—*
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Schmidt, William: *See—*
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Schmitz, Helmut; and Ramdohr, Detlef, to Mannesmannrohren-Werke Aktiengesellschaft. Method and apparatus for testing tubes during sizing by a mechanical expander. 3,823,605, Cl. 73-89.000.

Schmitz, Willi, to Mittelrheinische Metallgiesserei H. Byer KG. Apparatus for centrifugally casting an annulus of metal about a hub. 3,823,764, Cl. 164-288.000.

Schnakenberg, Herbert E. Spare tire clamp. 3,823,858, Cl. 224-42.240.

Schnegelberger, Harald; and Bellinger, Horst, to Hankel & Cie GmbH. Methods of combatting bacteria and fungi using bicyclic oxazolidines. 3,824,309, Cl. 424-272.000.

Schneider, Siegfried; Thate, Kurt; Geyken, Erwin; Kempe, Horst; and Macher, Stephen, to AGFA-Gevaert AG. Method of manufacturing a roller. 3,823,456, Cl. 29-148.40d.

Schnell, Hermann: *See—*
Rudolph, Hans; Heine, Hans-Georg; Fuhr, Karl; and Schnell, Hermann, 3,824,284.

Schoenwitz, Frank H. W., to Honeywell Inc. Read-only-memory storage apparatus for controlling data logging apparatus. 3,824,550, Cl. 340-151.000.

Schorter, Bruno, to U.S. Philips Corporation. Electronically controlled two-terminal flasher unit. 3,824,542, Cl. 340-81.00r.

Schrader, Hellmut. Film cartridge. 3,823,891, Cl. 241-71.100.

Schramm, Heinz-Helmut: *See—*
Slamecka, Ernst; Martschini, Karl; Pflaum, Eckhard; and Schramm, Heinz-Helmut, 3,824,360.

Schreyer, Gerd: *See—*
Kleemann, Axel; Kruger, Manfred; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,824,235.

Schroder, Paul; and Pollkotter, Gunter, to Leifeld & Co. Method and apparatus for producing dish-shaped articles. 3,823,591, Cl. 72-85.000.

Schroeder, Arnold: *See—*
Grimmelikhuysen, Jan Christiaan; and Schroeder, Arnold, 3,824,286.

Schuler, L., GmbH: *See—*
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Schultz, Robert F.; and Cook, Edward H., Jr., to Hooker Chemical Corporation. Bipolar electrode. 3,824,174, Cl. 204-290.00f.

Schultz, Robert F.; and Cook, Edward H., Jr., to Hooker Chemical Corporation. Bipolar electrode. 3,824,175, Cl. 204-290.00f.

Schulz, Gerhard: *See—*
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Schuringa, Leffert; and Roefs, Herman Albert Joannes, to U.S. Philips Corporation. Electric filament lamp. 3,824,421, Cl. 313-110.000.

Schurman, David B., Jr. Gun type soldering device with improved solder wire feeding mechanism. 3,824,371, Cl. 219-230.000.
Schuster, Martin E.; and Le Penske, Frederick J., III, to Coors, Adolph, Company. Sealing plug for a container. 3,823,848, Cl. 222-82.000.
Schuterer, Erich; Ulm, Klaus; Rebsdat, Siegfried; and Wimmer, Ignatz, to Farbwerke Hoechst AG. Process for the manufacture of 1,1,2,2-tetrahydroperfluore-alkanols. 3,824,296, Cl. 260-633.000.
Schuur, Cornelis Christianus Maria, to U.S. Philips Corporation. Matrix store incorporating noise-balancing. 3,824,569, Cl. 340-174.0dc.
Schwartz, Nelson N.: *See—*
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Schwarz, Alois: *See—*
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Schwarz, Meyer; Sonnet, Philip E.; and Wakabayashi, Nobel, to United States of America, Agriculture. Arthropod maturation inhibition employing certain epoxy compounds. 3,824,319, Cl. 424-278.000.
Schweitzer, Jack Ernest. Polymer catalyst. 3,824,216, Cl. 260-75.00r.
Schwerdt, Christopher B., to United States of America, Navy. High-purity, frequency-stable, adjustable, wien-bridge, oscillator. 3,824,497, Cl. 331-141.000.
SCM Corporation: *See—*
Diamond, Herrick R., 3,823,806.
Scott, Joe Weldon: *See—*
Scott, Kenneth N., 3,823,637.
Scott, Kenneth N.; deceased (by Scott, Joe Weldon; administrator). Programmed audio visual teaching aid. 3,823,637, Cl. 84-470.000.
Sebille, Christian A.; and Prugnaud, Claude J. P., to S. A. dite Ethylene Plastique and S. A. dite Comsip Automation. Module for use with systems handling multiple automatic functions. 3,824,435, Cl. 317-157.000.
Seddon, Thomas: *See—*
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Segawa, Masahiro; and Kawakami, Yukichika, to Kureha Kagaku Kogyo Kabushiki Kaisha. Polyvinylidene fluoride composition and coating thereof. 3,824,115, Cl. 117-21.000.
Segrest, Doyle E., to Texas Automatics, Inc. Gas operated bolt mechanism. 3,823,640, Cl. 89-154.000.
Seiberlich, Walter, to Maschinenfabrik Lorenz AG. Gear shaping apparatus with means for lifting cutter wheel relative to the work piece. 3,823,641, Cl. 90-7.000.
Seidel, Michael C.; von Meyer, William C.; and Greenfield, Stanley A., to Rohm and Haas Company. 1,2,4-4H-Triazole derivatives. 3,824,312, Cl. 424-269.000.
Seitz, Lamont J.: *See—*
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Seitz-Werke G.m.b.H.: *See—*
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Sellmaier, Alfons, deceased (by Sellmaier, Anne-Rose; and Sellmaier, Andreas Michael, heir-at-law); Noppel, Alban; and Sippel, Gunter, to Linde Aktiengesellschaft. Circulation system for low-temperature fluids. 3,823,569, Cl. 62-55.000.
Sellmaier, Andreas Michael, heir-at-law: *See—*
Sellmaier, Alfons, deceased; Noppel, Alban; and Sippel, Gunter, 3,823,569.
Sellmaier, Anne-Rose: *See—*
Sellmaier, Alfons, deceased; Noppel, Alban; and Sippel, Gunter, 3,823,569.
Selset, Rolf. Apparatus for slidably supporting curtains and the like. 3,823,439, Cl. 16-94.00d.
Semenov, Vladimir Nikolaevich: *See—*
Derzhavets, Abram Yakovlevich; Kogan, Petr Grigorievich; Semenov, Vladimir Nikolaevich; and Tabachnikov, Viktor Iosifovich, 3,823,828.
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Severijns, Adrianus Petrus: *See—*
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Seymour, Samuel L.; and Noca, Joseph A., to PPG Industries, Inc. Tempering glass sheets. 3,824,090, Cl. 65-114.000.
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Shah, Navnit Shankerlal, to Richards Manufacturing Company. Aural dressing. 3,823,713, Cl. 128-157.000.
Shakhov, Eduard Konstantinovich: *See—*
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Shamash, Maurice B.; Konsowski, Stephen G.; Lindberg, Frank A.; and Ponemone, Seymour J., to Westinghouse Electric Corporation. Solid state circuit module. 3,823,467, Cl. 29-580.000.
Shanoski, Henry: *See—*
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Shapiro, Stanley: *See—*
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Sharkitt, Patrick J.: *See—*
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Shaw, Larry K.: *See—*
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Shaw, M. W., (Steelworkers) Limited: *See—*
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Shaw, Malcolm William, to Shaw, M. W., (Steelworkers) Limited. Implements. 3,823,916, Cl. 254-132.000.
Sheffield, George V. Geared screwdriver. 3,823,755, Cl. 145-50.00r.
Sheler, Milo W., to Keltec Inc. Steering and drive mechanism for floor cleaning machine. 3,823,791, Cl. 180-6.660.
Shell Oil Comapny: *See—*
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Shell Oil Company: *See—*
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Shema, Bernard F.; Brink, Robert H., Jr.; and Swered, Paul, to Betz Laboratories, Inc. Compositions and their use as slime control agents. 3,824,316, Cl. 424-275.000.
Shema, Bernard F.; Brink, Robert H., Jr.; Swered, Paul; and Justice, Roger L., to Betz Laboratories, Inc. Composition and method for controlling aerobacter aerogenes. 3,824,318, Cl. 424-277.000.
Shenker, Jack David: *See—*
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Shenoha, James L., to Norwood Marking & Equipment Co., Inc. Inflated bag printer and method. 3,823,664, Cl. 101-41.000.
Shere, Kenneth E., to National Automatic Tool Company, Inc. Method for remelting sprue material. 3,824,298, Cl. 264-161.000.
Sherwood Refractories Inc., mesne: *See—*
Loxley, Ted A.; Wheaton, Harold L.; and Webb, John M., 3,824,113.
Shew, David Sun. Equipment for manufacturing printed matter. 3,824,614, Cl. 354-292.000.
Shichijo, Yoshihisa; Sato, Hideo; Iwasa, Toshio; and Uchida, Yasuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Flameproof modacrylic fibers. 3,824,222, Cl. 260-80.710.
Shiga, Tatsuhide: *See—*
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Shionogi & Co. Ltd.: *See—*
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Shlyandin, Viktor Mikhailovich: *See—*
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Shoe, Theodore W.; and Smith, Robert E., to Flexicore Co., Inc., The. Method of constructing a composite form with liner plates. 3,823,465, Cl. 29-471.300.
Shoe, Theodore W.; and Wise, Mark J., to Flexicore Co., Inc., The. Screeder. 3,824,055, Cl. 425-220.000.
Shoemaker, John Robert: *See—*
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Shoikhet, Grigory Yankelevich: *See—*
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Shotwell, Daniel B., to Caterpillar Tractor Company. Multi-plate vibration damper. 3,823,619, Cl. 74-574.000.
Shroff, Shrenik: *See—*
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Sieurin, Donald, to Morgan Construction Company. Material handling apparatus. 3,823,812, Cl. 198-31.0ab.

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Sigma-Tau Industrie Farmaceutiche Riunite S.p.A.: *See—*
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Sillion, Bernard: *See—*
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Silverstone, Calvin Eric: *See—*
Penny, Robert Noel; Parker, Peter Harry; and Silverstone, Calvin Eric, 3,824,036.

Simjian, Luther G. Merchandising arrangement utilizing a coded check. 3,824,544, Cl. 340-147.00a.

Simon, Philippe. Illuminated map. 3,824,591, Cl. 340-381.00r.

Simons, Allison K., to Universal Oil Products Company. Vehicle seat suspension with variable spring rate. 3,823,932, Cl. 267-133.000.

Simpla Plastics Limited: *See—*
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Singer Company, The: *See—*
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Sinnema, Feije H.; and Van Zwet, Henry, to Shell Oil Company. Process for preparing higher molecular weight polyepoxide products by reacting a polyepoxide with a phenol in presence of tetraalkylammonium halides. 3,824,212, Cl. 260-47.0ep.

Sioux Steam Cleaner Corporation: *See—*
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Sippel, Gunter: *See—*
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Sirai S.r.L. Societa Italiana Rizolatori Automatici Industriali: *See—*
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Sjundjukov, Nikolai Matveevich: *See—*
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Skoyles, Derek Robert, to U.S. Philips Corporation. Anti-lock brake systems. 3,823,988, Cl. 303-21.00f.

Skrzypczyk, William G., to General Electric Company. Traction motor inspection cover. 3,824,419, Cl. 310-89.000.

Slamecka, Ernst; Martschini, Karl; Pflaum, Eckhard; and Schramm, Heinz-Helmut, to Siemens Aktiengesellschaft. Compressed gas electrical circuit breaker. 3,824,360, Cl. 200-148.00a.

Slemp, Cecil. Footwear with heel and toe positions reversed. 3,823,494, Cl. 36-2.50r.

Slemp, Cecil, 1/2 to Mullins, Shelcy. Motor vehicle operator monitoring system. 3,824,538, Cl. 340-53.000.

Slenker, Stephen A., to Piconics, Inc. Miniaturized inductive component. 3,824,518, Cl. 336-96.000.

Small, Charles W.: *See—*
Konik, Edward H.; Drozd, Stanley C.; Small, Charles W.; Stuart, Robert W.; Cox, Richard E.; and Dery, William R., 3,823,490.

Smith, Dudley C.; Hurley, Jasper E.; and Harris, John D., to Mitchell, John E., Company. Machine for dispensing a semi-frozen carbonated beverage including a system for automatically controlling the quality of the beverage through timed modes. 3,823,571, C. 62-136.000.

Smith, Harry Niles. Fishing sinker. 3,823,503, Cl. 43-43.130.

Smith, Homer A., Jr., to Eastman Kodak Company. Method and apparatus for capture and retention of a transient image. 3,824,008, Cl. 353-26.000.

Smith, Horace L., Jr., to Smitherm Industries, Inc. Roasting apparatus. 3,823,662, Cl. 99-468.000.

Smith, Horace L., Jr., to Smitherm Industries, Inc. Method for expanding tobacco. 3,823,722, Cl. 131-140.00p.

Smith International, Inc.: *See—*
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Garrison, Erskine P.; and Tschirky, John E., 3,823,788.

Smith, James, to General Electric Company. Gas turbine with removable self contained power turbine module. 3,823,553, Cl. 60-39.16r.

Smith, Kobert Reynierson, II. Bicycle lock and alarm apparatus. 3,824,540, Cl. 349-63.000.

Smith, Leslie D.: *See—*
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Smith, Randlow; Strickland, John C.; and Sanwald, John W., to Texaco, Inc. Vertical reactor. 3,824,080, Cl. 23-288.00r.

Smith, Randlow; Strickland, John C.; Sanwald, John W.; and Jones, Henry B., to Texaco, Inc. Vertical reactor for two-phase vapor-liquid reaction charge. 3,824,081, Cl. 23-288.00r.

Smith, Robert C., to Rochester Shoe Tree Company, Inc. Spreader for shoe stretcher. 3,823,433, Cl. 12-117.200.

Smith, Robert E.: *See—*
Shoe, Theodore W.; and Smith, Robert E., 3,823,465.

Smith, Samuel; and Hubin, Allen J., to Minnesota Mining and manufacturing Company. Process for preparing polycationically active polymers for preformed polymers. 3,824,197, Cl. 260-2.00d.

Smith, Samuel; and Hubin, Allen J., to Minnesota Mining and Manufacturing Company. Process for reacting active hydrogen containing compounds with polycationically active polymers. 3,824,198, Cl. 260-2.00d.

Smith, Samuel; and Hubin, Allen J., to Minnesota Mining and Manufacturing Company. Process for preparing polycationically active polymers of tetrahydrofuran. 3,824,219, Cl. 260-79.30r.

Smith, Samuel; and Hubin, Allen J., to Minnesota Mining and Manufacturing Company. Polycationically active polymers. 3,824,220, Cl. 260-79.30r.

Smith, Thomas R., to Pyramid, Inc. Flexible coupling. 3,823,577, Cl. 64-11.00r.

Smitherm Industries, Inc.: *See—*
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Smith, Horace L., Jr., 3,823,722.

Smiths Industries Limited: *See—*
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Smythe, John W.; Reichman, Steven H.; and Weaver, Don M., to Federal-Mogul Corporation. Process for compacting metal powder. 3,824,097, Cl. 75-226.000.

Smythies, John R., to Nelson Research & Development Company. Topical ophthalmic composition and methods of use. 3,824,313, Cl. 424-274.000.

Snam Progetti S.p.A.: *See—*
Mauri, Marcello Massi; Moggi, Pietro Antonio; and Romano, Ugo, 3,824,252.

Snijders, Wilfred: *See—*
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Snyder, Harry A.: *See—*
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Snyder, Herbert C., to Brockway Glass Company, Inc. Apparatus for spraying cylindrical articles. 3,823,686, Cl. 118-314.000.

Soag Machinery Ltd.: *See—*
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Soakup, Robert J.: *See—*
Parliment, Thomas H.; Epstein, Martin P.; Clinton, William P.; Scarpellino, Richard; and Soakup, Robert J., 3,824,321.

Societe Anonyme des Usines Chausson: *See—*
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Societe Anonyme dite: L'Oreal: *See—*
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Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,824,075.
Kalopissis, Gregorie; and Vanlerberghe, Paris Guy, 3,824,294.

Societe en nom Collectif Science Union: *See—*
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Societe Industrielle et Commerical de Materiel Aeronautique (S.I.C.M.A.): *See—*
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Societe Nationale D'Etude Et De Construction De Moteurs D'Aviation: *See—*
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Societe Nouvelle de Roulements: *See—*
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Societe Rhodiaceta: *See—*
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Solco Basel AG: *See—*
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Solmax, Gungor M.: *See—*
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Solomon, Alvin I., to Durable International, Inc. Steam generating and control system. 3,823,497, Cl. 38-77.600.

Solomon, Georges P. J. Resilient attachment for skis. 3,823,955, Cl. 280-11.35t.

Soloviev, Igor Nikolaevich: *See—*
Sukhov, Ivan Alexeevich; Sjundjukov, Nikolai Matveevich; and Soloviev, Igor Nikolaevich, 3,823,645.

Soma, Takenobu: *See—*
Asako, Tsunehiko; Soma, Takenobu; Masuya, Hirotomo; Harukawa, Tadatsugu; and Miki, Takuichi, 3,824,237.

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Sorber, Thomas A.; and Unks, Ralph C., to I. I. Communications Corporation. Voice and data multiplexing system with improved signalling. 3,824,347, Cl. 179-15.0bm.

Sorenson Engineering Inc.: *See—*
Sorenson, Jess Frank, 3,823,595.

Sorenson, Jess Frank, to Sorenson Engineering Inc. Workpiece positioner and ejector. 3,823,595, Cl. 72-312.000.

Sosson, Guy. Apparatus for separating comminuted electrical wire. 3,823,820, Cl. 209-44.000.

Southern Gas Association, mesne: *See—*
Pantermuehl, Pontie J.; and Munsch, George F., 3,823,608.

Southwest Research Institute: *See—*
Guion, William G.; and Green, Terence C., 3,824,596.

Spaleny, George R.: *See—*
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Spaleny, George R.; McCalley, Edward W.; and DeYoung, James H., to Standard Register Company, The. Film viewer and control apparatus. 3,824,009, Cl. 353-27.000.

Speer, Walter Franklin; and Reed, Lloyd Edward, to RCA Corporation. Parity of tuning apparatus. 3,824,507, Cl. 334-47.000.

Spencer, Edward Guerrant: *See—*
Fischer, Robert Frederick; Schmidt, Paul Herman; and Spencer, Edward Guerrant, 3,824,568.

Spengler, Ernst M., to Roeder & Spengler. Punching apparatus. 3,823,636, Cl. 83-511.000.

Spennemann, Wilhelm: *See—*
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Sperry Rand Corporation: *See—*
Ashley, James R.; and Palka, Frank M., 3,824,485.
Bhat, Ghanshyam A.; and Buckley, Charles G., 3,823,486.
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Rothenberg, Carl, 3,824,500.
Wegener, Horst A. R., 3,824,564.

Spink, Robert w., to Cutler-Hammer, Inc. Controlled rectifier systems and flexible gate pulse control circuits therefor. 3,824,444, Cl. 321-5.000.

Spira, Joel S.; and Licata, Joseph, to Lutron Electronics Co., Inc. High frequency fluorescent tube lighting circuit and A-C driving circuit therefor. 3,824,428, Cl. 315-105.000.

Spisak, Edward G., to S&S Product Engineering Service, Inc. Hub cap for molded vehicle wheel. 3,823,982, Cl. 301-37.00p.

Spitalnik, Robert, to U.S. Philips Corporation. Microwave oscillator. 3,824,489, Cl. 331-107.00r.

Spitz, Leonard, to Advertisers Display & Exhibits, Inc. Advertising and promotional display apparatus. 3,823,500, Cl. 40-219.000.

Spitzer, Stuart Marshall: *See—*
D'Asaro, Lucian Arthur; Dyment, John Cameron; Kuhn, Matthew; and Spitzer, Stuart Marshall, 3,824,133.

Spivack, John Denon: *See—*
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Spon, Carroll V., to Keystone Consolidated Industries, Inc. Universal key lock, privacy latch and door knob. 3,823,585, Cl. 70-146.000.

Sponholz, Richard; and Kiefer, Hans, to Bodenseewerk Perkin-Elmer & Co., GmbH. Circuit arrangement for automatic zero level compensation. 3,824,481, Cl. 328-162.000.

Sprecher & Schuh AG: *See—*
Hentschel, Michael, 3,824,430.

Square D Company: *See—*
Boley, Robert D.; and Grass, William E., 3,824,434.
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Squires, Howard J.; and Rimlinger, Donald C., to Stromberg-Carlson Corporation. Transport assembly. 3,823,461, Cl. 19-203.00p.

St. Onge, Eugene: *See—*
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Staas, Frans Adrianus; Melse, Jan Leendert; Van Esdonk, Johannes; Severijns, Adrianus Petrus; and Van de Mosselaer, Adrianus Pieter, to U.S. Philips Corporation. Method of fabricating a heat exchanger having two separate passageways therein. 3,823,457, Cl.29-157.30d.

Stackman, Robert W., to Celanese Corporation. Acid-interchage reaction for forming halogenated aromatic polyesters. 3,824,213, Cl. 260-47.00c.

Stadt Wien: *See—*
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Staffordshire Ceramic Systems Limited: *See—*
Wedgwood, Sidney, 3,824,056.

Stalfors, Rolf Lennart, to AB Bofors. Device for determining the angle between two directions. 3,824,019, Cl. 356-145.000.

Stamm, Johann A.; and Eshghy, Siavash, to Factory Mutual Research Corporation. Fire extinguishing system nozzle. 3,823,779, Cl. 169-39.000.

Standard International Corporation: *See—*
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Standard Oil Company: *See—*
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Standard Pressed Steel Co.: *See—*
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Stauffer, Harry C.; Titmus, Robert A.; and Murphy, James R., to Gulf Research & Development Company. Thermally stable jet fuel. 3,824,181, Cl. 208-143.000.

Steffens, George L.: *See—*
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Stegeman, Bernardus Hendrikus Marinus Johannes; and Venker, Hilrich Jan Matthijs, to Honeywell Bull (Nederland) N.V. (Societe anonyme). Device for transforming a rotational motion into a translational motion. 3,824,420, Cl. 310-89.000.

Steigelmann, Edward F.: *See—*
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Stein, Edward I. Alphanumeric printing system employing liquid crystal matrix. 3,824,604, Cl. 354-5.000.

Stein, Heinrich: *See—*
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Stein, Werner: *See—*
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Stengard, Robert A.: *See—*
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Stenger, August M., to Ingersoll-Rand Corporation. Machinery mounting base. 3,823,904, Cl. 248-23.000.

Stephens, Charles R., Jr.: *See—*
Blackwood, Robert K.; and Stephens, Charles R., Jr., 3,824,285.

Stephens, Matheson George Bernard; and Wuest, Robert Albert, to Lilly, Eli, and Company. Locking capsule. 3,823,843, Cl. 220-42.00a.

Sterling Drug Inc.: *See—*
Erickson, Allen H.; Pogainis, Edmunds M.; and Teletzke, Gerald H., 3,824,186.

Stern, Sidney Charles; Eldridge, Ralph Gray; Johnson, John Clark; and Beaver, David Karl, to Enviro/Tech Sciences, Inc. Calibrated electrostatic charge detector and method for measuring the strenth of electrostatic fields. 3,824,454, Cl. 324-32.000.

Stevens, A. Brian: *See—*
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Stevens, J. P., & Co., Inc.: *See—*
Hansen, Ralph H., 3,823,560.

Stickney, Arthur C., to Eastern Company, The. Acceleration and deceleration sensing and indicating system for boats and the like vessels. 3,824,577, Cl. 340-262.000.

Stoeckler, Hans Adolf: *See—*
Ting, Youn H.; and Stoeckler, Hans Adolf, 3,824,328.

Stoetzer, Ernst-Joachim; Wassmuth, Heinrich; and Abraham, Andreas, to Dynamit Nobel A.G. Process for the manufacture of low-density nitrocellulose granules. 3,824,108, Cl. 106-128.000.

Stolin, Billy L.; and Brown, Ronald D., to Caterpillar Tractor Company. Torch height control for flame cutting machines. 3,823,928, Cl. 266-23.00m.

Stolpa, Karel: *See—*
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Stone, Ray L. Plastic safety razor. 3,823,471, Cl. 30-85.000.

Straitz, John F., III, to Combustion Unlimited, Incorporated. Flare stack gas burner. 3,824,073, Cl. 431-284.000.

Straumsnes, O. Robert. System for transfer of goods on railroad trains when in motion. 3,823,671, Cl. 104-18.000.

Straumsnes, O. Robert. Underseas transport system. 3,823,680, Cl. 114-.50r.

Straumsnes, O. Robert. Guidance and information system for mobile objects. 3,824,534, Cl. 340-24.000.

Stricker, Gunter: *See—*
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Strickland, John C.: *See—*
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Smith, Randlow; Strickland, John C.; Sanwald, John W.; and Jones, Henry B., 3,824,081.

Stroberg, John Emil; Thunblom, Nils Birger; and Henriksson, Lars-Goran, to Aktiebolaget CTC. Tubular washing machine. 3,823,583, Cl. 68-58.000.

Stromberg-Carlson Corporation: *See—*
Merriam, Donald R., 3,824,348.
Merriam, Donald R., 3,824,350.
Squires, Howard J.; and Rimlinger, Donald C., 3,823,461.

Strongin, Myron; Saxena, Anand M.; and Crow, Jack E., to United States of America, Atomic Energy Commission. Method of making a solid-state superconducting electromagnetic radiation detector. 3,824,457, Cl. 324-43.00r.

Stuart, Robert W.: *See—*
Konik, Edward H.; Drozd, Stanley C.; Small, Charles W.; Stuart, Robert W.; Cox, Richard E.; and Dery, William R., 3,823,490.

Stubbmann, Albert, to Kohner Bros., Inc. Gameboard with two playing surfaces and indicating discs slidable therebetween. 3,823,944, Cl. 273-136.00f.
Stubits, Marcella C.: *See—*
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Stultz, James C.: *See—*
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Styan, Peter Ormonde; and Mason, Stuart John, to Plessey Handel und Investments A.G. Optical character recognition apparatus. 3,824,549, Cl. 340-146.3ac.
Styrkowicz, Stanley J., to Guardian Electric Manufacturing Company. Mold for mounting switch blades and the like. 3,824,053, Cl. 425-123.000.
Suganuma, Burou: *See—*
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Sukhov, Ivan Alexeevich; Sjundjukov, Nikolai Matveevich; and Soloviev, Igor Nikolaevich. Milling machine. 3,823,645, Cl. 90-17.000.
Sullivan, Dean R.; and Pohl, James E., to United States of America, Navy. Satellite communications link monitor. 3,824,548, Cl. 340-146.10e.
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Suominen, Heikki Samuli; and Pyhalto, Pekka Juhani, to Amerplast. Punch for simultaneously punching unequal sized holes. 3,823,630, Cl. 83-98.000.
Suzuki, Kozi, to Tokyo Sanyo Electric Co., Ltd. and Sanyo Electric Co., Ltd. Multi-channel tape playing device. 3,824,621, Cl. 360-78.000.
Suzuki, Ryuzo; Miyakawa, Seiichi; and Watanabe, Masanori, to Katsuragawa Denki Kabushiki Kaisha. Transfer printing apparatus of electrophotographic apparatus. 3,824,011, Cl. 355-3.000.
Suzuki, Takami, to Ricoh Co., Ltd. Rotary print wheel mechanism with hammering bracket. 3,823,807, Cl. 197-55.000.
Suzuki, Takuji; and Imao, Norihisa. Television receiver power supply. 3,824,338, Cl. 178-7.30r.
Suzuki, Toshiyuki, to Enshu Limited. Photoelectric type weft sensing process and weft sensor. 3,824,401, Cl. 250-561.000.
Suzuki, Yoshiaki: *See—*
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Svensson, Gustav Einar Wilhelm. Safety Harness. 3,823,893, Cl. 242-107.400.
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Swartz, William G. Rotary engine. 3,823,695, Cl. 123-8.230.
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Shema, Bernard F.; Brink, Robert H., Jr.; Swered, Paul; and Justice, Roger L., 3,824,318.
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Szeler, Zbigniew W.: *See—*
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Takabayashi, Teruo, to Kohshoh Limited. Plastic clasp means. 3,823,443, Cl. 24-186.000.
Takabayashi, Teruo, to Kohshoh Limited. Plastic buckle or adjuster. 3,823,444, Cl. 24-191.000.
Takada, Masaharu; Yamada, Koichi; and Hamahata, Kozo, to Sasakura Engineering Co., Ltd. Evaporating method and apparatus. 3,824,154, Cl. 202-174.000.
Takada, Masaharu, to Sasakura Engineering Co. Ltd. Multiple effect evaporating apparatus. 3,824,155, Cl. 202-174.000.
Takada, Takezo, to Takata Kojyo Co., Ltd. Method and apparatus for laying thermoplastic pipe. 3,823,565, Cl. 61-72.100.
Takahashi, Hiroshi: *See—*
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Takamizawa, Akira; and Hirai, Kentaro, to Shionogi & Co. Ltd. Thiozolium salt composition and method for treatment of coccidiosis therewith. 3,824,308, Cl. 424-251.000.
Takashina, Hiroyuki: *See—*
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Takehara, Hiraki. Plant cultivating apparatus. 3,823,508, Cl. 47-1.200.
Takekoshi, Tohru; and Webb, Jimmy L., to General Electric Company. Crown ether polymers prepared from chloral bromal or glyoxylic acid. 3,824,215, Cl. 260-52.000.
Takezaki, Tsuneo: *See—*
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Tambert, John: *See—*
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Teng, James; Stubits, Marcella C.; Pyler, Richard E.; and Lucas, James M., to Anheuser-Busch, Incorporated. Esters of polymeric hydrox-

ypropyl carbohydrates and method of using same as gelling agent for organic solvents. 3,824,085, Cl. 44-7.00b.
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Terayama, Mutsuo; and Yamamoto, Kenji, to Yamamoto Kagaku Gosei K.K. Pressure sensitive copy paper employing dibenzylamino fluoran compounds. 3,824,119, Cl. 117-36.200.
Terracol, Claude, to Merlin Gerin, Societe Anonyme. Electromagnetic repulsion device actuating the movable contact member of a circuit interrupter. 3,824,508, Cl. 335-16.000.
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Thell, Clarence M. Art canvas support structure. 3,823,909, Cl. 248-452.000.
Thompson, Stanley P. Method of drying a product. 3,824,065, Cl. 432-14.000.
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Tikhonovich, Alexandr; Timofeevich, Lev; and Lvovich, Alfred. Inductor for magnetic pulse pressure shaping of metals. 3,823,589, Cl. 72-56.000.
Time Commercial Financing Corporation: *See—*
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Tomalia, Donald A.; Brewbaker, James L.; and Ojha, Narayanlal D., to Dow Chemical Company, The. Aminoalkylation of alcohols using an aziridine-sulfur dioxide complex. 3,824,269, Cl. 260-456.00a.
Tomisawa, Norio; Uchiyama, Yasuji; and Okumura, Takatoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Variable frequency dividing circuit. 3,824,379, Cl. 235-92.0pe.
Tomy Kogyo Co., Ltd.: *See—*
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Torii, Michihiro: *See—*
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Torii, Nozomu, to Aisin Seiki Kabushiki Kaisha. Closure latch. 3,823,966, Cl. 292-216.000.
Toro Company, The: *See—*
Check, Joseph M.; and Lewis, Ronald E., 3,823,781.
Torrence, Arthur L., to Mechtronics Corporation. Integrated diurnal tide and time clock. 3,823,544, Cl. 58-3.000.
Tortel, Jean: *See—*
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Tournoux, Paul M.: *See—*
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Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
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Treadway, Ronald L., to Motorola, Inc. Transistor crystal oscillator with automatic gain control. 3,824,491, Cl. 331-109.000.
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Trejbal, Earl A. House trailer stabilizer and jack system. 3,823,958, Cl. 280-150.500.
Tremont Research Co., Inc.: *See—*
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TREPEL AG.: *See—*
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Trevail, Lewis Herbert: *See—*
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Tribble, David E. Surgical drain. 3,823,720, Cl. 128-350.00r.
Trimble, Cleve, to Dow Corning Corporation. Blood vessel bridging device. 3,823,705, Cl. 128-1.00r.
Trodync Corporation: *See—*
Notvest, Kenneth R., 3,824,377.
Tromovitch, Theodore A. Portable cryosurgical apparatus. 3,823,718, Cl. 128-303.100.
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Tso, Tien C.; and Steffens, George L., to United States of America, Agriculture. Method of inhibiting the growth of tobacco suckers. 3,824,094, Cl. 71-78.000.
Tsuboi, Masayoshi; Yano, Yasushi; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Process of producing ink sheet. 3,824,118, Cl. 117-36.200.
Tsuchiya, Hiroshi; Mukai, Kunio; Kimura, Akio; Kawano, Suminori; Fujimoto, Keimei; Ozaki, Toshiaki; Yamamoto, Sigeo; Okuno, Yositosi; Tanaka, Katsutoshi; Ooishi, Tadashi; and Takeda, Hisami, to Sumitomo Chemical Company, Ltd. Insecticidal and fungicidal coposition. 3,824,306, Cl. 424-225.000.
Tsuchiya, Takeo, to Honda Koki Kabushiki Kaisha and Honda Giken Kogyo Kabushiki Kaisha. Hydraulic grinding method. 3,823,514, Cl. 51-281.00p.
Tsuji, Keiichiro: *See—*
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Tuji, Hirokazu, to Nippon Air Brake Co., Ltd., The. Pneumatic pulse counting device. 3,823,701, Cl. 123-179.00r.
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Uchida, Kazuhiko, to LogEtronics Inc. Air-jet crossover for automatic film processors. 3,824,616, Cl. 354-339.000.
Uchida, Kozo, to Iwatsu Electric Co., Ltd. Method of measuring the electostatic capacity of a capacitor. 3,824,459, Cl. 324-60.0cd.
Uchida, Masaaki, to Honda Giken Kogyo Kabushiki Kaisha. Accessorial device for holding a helmet or the like on an autobicycle. 3,823,856, Cl. 224-36.000.
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Umeda, Toshio: *See—*
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Akiyama, Tadashi; Fikuda, Ryuhei; Ando, Masanobu; Wada, Norikazu; Umeda, Toshio; and Shiga, Tatsuhide, 3,823,726.
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Unno, Yoshio. Ping-pong table with swing top board. 3,823,938, Cl. 273-30.000.
Uno, Naoyuki; and Nomura, Katsuhiko. Mechanism for indicating condition of operability of an electrically controlled camera shutter. 3,824,612, Cl. 354-266.000.
Uozumi, Masana: *See—*
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Urschel, Joe R. Machine for reducing the sound level of its operation. 3,823,880, Cl. 241-86.000.
Urynowicz, James P.: *See—*
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Ushimaru, Yutaka; Matsuo, Koichi; and Tochio, Yukihiro, to Mitsui Mining & Smelting Co., Ltd. Catalyst for use in conversion of gases and method for preparing thereof. 3,824,194, Cl. 252-458.000.
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van de Griend, Jan Maarten, to U.S. Philips Corporation. Vibration-damped brush assembly for use in a small dynamo-electric machine. 3,824,416, Cl. 310-51.000.
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Van Der Walt, Nicolaas; Bout, Bernardus J.; and Newington, Timothy J., to Anglo American Corporation of South Africa Limited. Smoke detectors. 3,824,422, Cl. 313-218.000.
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Van Houwelingen, Jan; Van Osch, Gerardus Wouter Serge; and Weelink, Anton Maarten Herman, to Control Data Corporation. Novel electrochemical electrode assembly. 3,824,171, Cl. 204-195.00m.

Van Leemput, Hendrick Jozef, to National Forge Company. Mold apparatus for isostatic pressing of hollow parts. 3,824,051, Cl. 425-78.000.

Van Osch, Gerardus Wouter Serge: *See—*
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Van Osch, Gerardus Wouter Serge; Van Houwelingen, Jan; and Weelink, Anton Maarten Herman, to Control Data Corporation. Ion selective electrode comprising gold. 3,824,169, Cl. 204-195.00m.

Van Stratum, Antonius Johannes Alberta; and Weekers, Theodorus Hendrikus, to U. S. Philips Corporation. Method of manufacturing an indirectly heated cathode and cathode manufactured according to this method. 3,823,453, Cl. 29-25.140.

Van Wagenen, Norman L.; and Lamph, Ara Norman. Fluid motor. 3,823,557, Cl. 60-325.000.

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Vanlerberghe, Paris Guy: *See—*
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Vanti, Lamberto, to Sirai S.r.L. Societa Italiana Rizolatori Automatici Industriali. Electromagnetically operated valve. 3,823,736, Cl. 137-596.170.

Varga, Janos: *See—*
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Vassiliades, Anthony E.; Vincent, David N.; and Shroff, Shrenik, to Champion International Corporation. Method of applying graft copolymer to cellulosic substrate and resultant article. 3,824,114, Cl. 117-21.000.

Venema, Harry J., to Borg-Warner Corporation. Breath testing system. 3,824,079, Cl. 23-254.00e.

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Vermillion, Ronald G., to United States of America, Navy. Analog to digital converter having digital offset correction. 3,824,588, Cl. 340-347.0cc.

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Vieland, Leon Joseph; and Wicklund, Arnold Wilbert, to RCA Corporation. Process for preparing super-conducting niobium-gallium alloy. 3,824,082, Cl. 29-194.000.

Vierling, Donald E.: *See—*
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Villanueva, Antonio F. Hair conditioner. 3,824,304, Cl. 424-74.000.

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Vittoz, Eric Andre; and Fonjallaz, Claude, to Centre Electronique Horloger, S.A. Electronic watch. 3,823,545, Cl. 58-23.00r.

Voda, Gustav, to Elitex Zavody textilniho strojirenstvi, generalni reditelstvi. Drive means for double cylinder circular knitting machine. 3,823,578, Cl. 66-14.000.

Vogel, Christian: *See—*
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Voit, Franz. Optical spectacles including adhesive bonding means between metal spectacle frames and ophthalmic lenses. 3,824,006, Cl. 351-106.000.

Voith, J. M., GmbH: *See—*
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Voitsekhovsky, Bogdan Vyacheslavovich; Nikolaev, Valentin Pavlovich; and Shoikhet, Grigory Yankelevich. Impact body of a hammer. 3,823,786, Cl. 173-126.000.

Volovelsky, Lev Natanovich; and Yakovleva, Maya Yakovlevna. Method of producing Δ'-testololactone. 3,824,254, Cl. 260-343.20s.

Vom Dorp, Walter; and Eversberg, Hans, to Wean United, Inc. Rolling of tubular blooms to produce tubes. 3,823,594, Cl. 72-209.000.

Von Castelmur, Hans, to Solco Basel AG. Complex compound of a substituted 3-amino-3-pyrazolin and methods of producing and further reacting the same. 3,824,251, Cl. 260-310.00a.

Von Corpon, Paul Saffin. Mixing tap. 3,823,742, Cl. 137-636.300.

von der Crone, Jost, to Ciba-Geigy Corporation. Process for the manufacture of tetrachlorocyanobenzene or tetrabromocyanobenzene. 3,824,270, Cl. 260-465.00b.

Von Esch, Paul, to Bekama AG. Multicylinder motor or engine with double-acting pistons. 3,823,697, Cl. 123-43.00r.

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Vydrin, Vladimir Nikolaevich; and Agefv, Leonid Matveevich. Method of rolling metal sheet articles between the driven rolls of the roll mill. 3,823,593, Cl. 72-205.000.

Vyzkumny Ustav Inzinierskych Stavieb: *See—*
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Wada, Takeo, to Takeda Chemical Industries, Ltd. Method for manufacturing a molded article of expanded vermiculite. 3,824,297, Cl. 264-25.000.

Wadsworth, Geoffrey. Synchronizing valves. 3,823,646, Cl. 91-171.000.

Wagensonner, Eduard: *See—*
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Wald, Milton M., to Shell Oil Comapny. Hydrocracking petroleum and related materials. 3,824,178, Cl. 208-108.000.

Walker Crosweller & Company Limited: *See—*
Arbon, Dennis Charles, 3,823,740.

Wall, Michael Richard: *See—*
Burch, James Morriss; Wilton, Raymond John; Reid, Colin David; and Wall, Michael Richard, 3,823,604.

Wallace, Gary Leonard, to Chemetron Corporation. Method and apparatus for producing weight controlled groups of sliced food product. 3,823,821, Cl. 209-74.000.

Wallace, Henry W. Heat pump. 3,823,570, Cl. 62-56.000.

Walsh, George M., to Raytheon Company. Plural beam steering system. 3,824,531, Cl. 340-3.00r.

Walters, John Benjamin Leslie, to Lucas Electrical Company Limited, The. Counters. 3,824,389, Cl. 235-117.00r.

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Wang, Wu Lan: *See—*
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Wardman, Edward: *See—*
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Ware, Paul C. Water cannon. 3,823,847, Cl. 222-79.000.

Warren, James B.: *See—*

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Warshaw, Abe: *See—*
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Warwick Electronics Inc.: *See—*
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Waseleski, Joseph W., Jr.; and Charnley, Ralph E., to Texas Instruments Incorporated. Apparatus for monitoring bearing temperature and for protecting bearing from overtemperature. 3,824,579, Cl. 340-269.000.
Wassmuth, Heinrich: *See—*
Stoetzer, Ernst-Joachim; Wassmuth, Heinrich; and Abraham, Andreas, 3,824,108.
Watabe, Masahiro, to Usui Kokusai Sangyo Kabushiki Kaisha. Trailer capable of lifting and lowering boats or the like. 3,823,917, Cl. 254-139.100.
Watanabe, Masanori: *See—*
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Watanabe, Toshiyuki: *See—*
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Waters, Elmer D.: *See—*
Anderson, John H.; and Waters, Elmer D., 3,823,769.
Waters, Robert S., to Schick Incorporated. Device for dispensing heated fluent products. 3,823,851, Cl. 222-146.0ha.
Watkins, Windell C., to Eastman Kodak Company. Stabilization of α,α-disubstituted-β-propiolactone. 3,824,257, Cl. 260-343.900.
Watry Industries Inc.: *See—*
Watry, Nic J., 3,823,765.
Watry, Nic J., to Watry Industries Inc. Die casting machine. 3,823,765, Cl. 164-303.000.
Waysilk, Enid A.: *See—*
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Waysilk, John J.; and Waysilk, Enid A. Method and apparatus for lavaging the lower intestinal tract. 3,823,714, Cl. 128-229.000.
Wean United, Inc.: *See—*
Vom Dorp, Walter; and Eversberg, Hans, 3,823,594.
Weaver, Don M.: *See—*
Smythe, John W.; Reichman, Steven H.; and Weaver, Don M., 3,824,097.
Weaver, Don M.; Reichman, Steven H.; and Castledine, Buddy W., to Federal-Mogul Corporation. Metal powder extrusion process. 3,823,463, Cl. 29-417.000.
Webb, George Toney, to International Business Machines Corporation. Position indication apparatus. 3,824,513, Cl. 335-207.000.
Webb, Jimmy L.: *See—*
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Webb, John M.: *See—*
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Webber, Geoffrey Terence; and Winchester, James Henry, to Whitehall Machinery Limited. Apparatus for handling sacks. 3,823,438, Cl. 15-304.000.
Weber Marking systems, Inc: *See—*
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Webster, George H.: *See—*
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Wedgwood, Sidney, to Staffordshire Ceramic Systems Limited. Apparatus for sponging the rims of unfired ceramic hollow-ware. 3,824,056, Cl. 425-266.000.
Wedyck, Janis E.: *See—*
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Wegener, Horst A. R., to Sperry Rand Corporation. Integrated threshold MNOS memory with decoder and operating sequence. 3,824,564, Cl. 340-173.00r.
Wehrmann, Felix, to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft. Method of anodically coating aluminum. 3,824,159, Cl. 204-58.000.
Weiant, David S., to AA Quality Construction Material, Inc. Mortar compositions containing mixtures of hydroxyalkyl celluloses. 3,824,107, Cl. 106-93.000.
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Weigert, Wolfgang: *See—*
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Weinstein, Paul, to Swiss Aluminum Ltd. Thermal break type architectural extrusions. 3,823,524, Cl. 52-729.000.
Wells, Anthony Russell, to Alderson, S., Company Limited. Ceilings for buildings. 3,823,523, Cl. 52-648.000.
Wells, Paul Steven: *See—*
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Wells, William; and Haysom, Derek W. R., to Sydney Steel Corporation. Tapping of a blast furnace. 3,823,931, Cl. 266-42.000.
Welsch, Walter N., to Dynabrade, Inc. Miniature belt grinder. 3,823,513, Cl. 51-170.0eb.
Welsh, Ivan Eugene II; and Heckman, Ray Flow, to Brown Group, Inc. Tent stake jack. 3,823,430, Cl. 7-9.000.
Weninger, August Edwin, to Bird Corporation. Demand valve assembly. 3,823,738, Cl. 137-613.000.
Wennberg, Olov Carl Gustav. Device for discharging bulk masses from a storage container. 3,823,837, Cl. 214-17.00d.
Wesener, Erich; deceased (by Wesener, Renate; and Wesener, Oliver; heirs), to Buro Patent AG. Conveyor installation with individual railbound self-propelling vehicle groups. 3,823,673, Cl. 104-148.00r.
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West Laboratories, Inc.: *See—*
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Westinghouse Brake and Signal Company Limited: *See—*
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Parfitt, Maurice; and Langley, Keith William, 3,823,984.
Westinghouse Electric Corporation: *See—*
Carlson, Norman R.; Haley, Paul H.; and Enns, Mark K., 3,824,624.
Parris, William J., 3,824,504.
Shamash, Maurice B.; Konsowski, Stephen G.; Lindberg, Frank A.; and Ponemone, Seymour J., 3,823,467.
Wey, Raymond; Guisen, Pierre; and Le Dred, Ronan, to Compagnie Francaise de Raffinage. Process of preparing silicates of high porosity and silicates obtained by said process. 3,824,191, Cl. 252-378.00r.
Whaley, William L.: *See—*
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Wharton, James Hugh, to RCA Corporation. Pulse delay circuit. 3,824,411, Cl. 307-262.000.
Wheaton, Harold L.: *See—*
Loxley, Ted A.; Wheaton, Harold L.; and Webb, John M., 3,824,113.
Wheeler, Larry M.: *See—*
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Whelehan, James J. Jr., to Cutler-Hammer, Inc. Pump generated bias for parametric amplifiers. 3,824,482, Cl. 330-4.900.
White, Edward L.; and Augustyn, Edward J., to NL Industries, Inc. High temperature polyvinyl chloride compositions. 3,824,202, Cl. 260-23.00a.
Whitehall Machinery Limited: *See—*
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Whyte, Albert J., to Standard International Corporation. Adjustable bed rails. 3,823,428, Cl. 5-331.000.
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Widde-Glaser, Inc.: *See—*
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Wiebe, Harold Dean, to Cincinnati Milacron Inc. Dither circuit. 3,824,438, Cl. 318-631.000.
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Wiegand David E., to United States of America, Atomic Energy Commission. Magnetometer flowmeter using permanent magnets and magnetometer elements aligned with the flow. 3,824,456, Cl. 324-34.0fl.
Wieland, Dieter; and Becker, Hans, to Seitz-Werke G.m.b.H. Horizontal filter press. 3,823,826, Cl. 210-225.000.
Wikstrom, Karl H. R.; and Ericson, Per E., to Method of manufacturing a surface soil. . 3,824,092, Cl. 71-12.000.
Wilcox, Milton E., to Motorola, Inc. Temperature stable relaxation oscillator having controllable output frequency. 3,824,494, Cl. 331-111.000.
Williams, James E.; and Fleischer, Jean C., to Eastman Kodak Company. Alkaline reactivation of alumina supported palladium catalysts. 3,824,193, Cl. 252-412.000.
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Winicov, Murray W.; and Schmidt, William, to West Laboratories, Inc. Phenolic synthetic detergent-disinfectant. 3,824,190, Cl. 252-106.000.
Winters, R. F. Two wheel drive bicycle. 3,823,959, Cl. 280-234.000.
Winzeler, James E.; and McClure, William M., to Caterpillar Tractor Company. Clutch with controlled coolant flow. 3,823,802, Cl. 192-113.00b.
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Wisniewski, Wladyslaw; Piotrowski, Jan; and Szeler, Zbigniew W., to Centrum Techniki Okretowej, Przedsiebiorstow Panstwowe Wyodrebnione. Variable-capacity sliding-vane pump. 3,824,045, Cl. 418-30.000.
With, Bror. Ski binding of the toe binding type. 3,823,953, Cl. 280-11.35b.
Wixon, Thomas G. Automatic repertory dialer. 3,824,351, Cl. 179-90.00b.
Woestman, John W., 1/2 to Zuritsky, Joseph S. and 1/2 to Zuritsky, Herman and Zuritsky, Lee. Apparatus for refracting eyes. 3,824,005, Cl. 351-8.000.
Wolf, Peter, to International Business Machines Corporation. Method and apparatus for allocating storage addresses to data elements. 3,824,561, Cl. 340-172.500.
Wolfe, Robert L.; and Trebnik, Augustine, to Reliance Electric Company. Method for improving wear characteristics of bronze. 3,824,132, Cl. 148-13.200.
Wolff, Walter M., to United States of America, Air Force. Pneumatic linear accelerator. 3,823,600, Cl. 73-12.000.
Wondris, Erich F., to National Steel Corporation. Roll-couple, continuous-strip caster. 3,823,762, Cl. 164-277.000.
Wood, Charles W.: *See—*
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Wood, Chester W.: *See—*
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Woodriff, Ray A.; and Lech, Jerome F. Combined sample collection and vaporization system for spectro-chemical analysis. 3,824,016, Cl. 356-85.000.
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Yamamoto, Kazumoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Semi-sealed silencer structure. 3,823,793, Cl. 181-33.00r.
Yamamoto, Kenji: *See—*
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Yamamoto, Sigeo: *See—*
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Yandt, Carl F. Spare tire carrier. 3,823,857, Cl. 224-42.240.
Yang, Kang: *See—*
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Yazaki, Takehito; Kanatani, Keiichi; and Sakamoto, Sadao, to Sayno Electric Co., Ltd. Light valve. 3,823,998, Cl. 350-150.000.
Yevick, George J., to Personal Communications, Inc. Color micro optic apparatus. 3,824,609, Cl. 354-102.000.
Yo, Ikuko: *See—*
Ito, Hiroyuki; Sasaki, Yutaro; Miyamoto, Shigetoshi; Kayama, Naohiro; Kajiwara, Ikuo; Iguchi, Yoichi; Sakaguchi, Kimiko; Hama, Kazuaki; Yo, Ikuko; Tsutsui, Hiroko; Nishi, Fusako; and Fujii, Setsuro, 3,824,267.
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Yoshiyama, Ichiro, to Minolta Camera Kabushiki Kaisha. Photographic exposure condition indicating device. 3,824,606, Cl. 354-50.000.
Young, Stephen A.: *See—*
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Zacharin, Alexey T., to United States of America, Army. Fail-safe hand grenade. 3,823,669, Cl. 102-64.000.
Zacharin, Alexey T., to United States of America, Army. Hand grenade trigger safety lock. 3,823,670, Cl. 102-64.000.
Zackheim, Eli A., to Silver, Jules. Prepunctured closure. 3,823,840, Cl. 215-247.000.
Zama, Matuo: *See—*
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Zangenfeind, Helmut; and Nagel, Erich, to Agfa-Gevaert Aktiengesellschaft. Apparatus for detecting and guiding the leaders of photographic roll films. 3,823,888, Cl. 242-55.000.
Zechmeister, Hartwin; and Zeilinger, Hans, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Ski. 3,823,956, Cl. 280-11.131.
Zegers, Leo Eduard; and Snijders, Wilfred, to U.S. Philips Corporation, mesne. System for transmitting information in the prescribed frequency-band. 3,824,468, Cl. 324-32.000.
Zeilinger, Hans: *See—*
Zechmeister, Hartwin; and Zeilinger, Hans, 3,823,956.
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Adler, Robert; and Knitter, Roger W., 3,824,352.
Zenkner, Kurt; Kozel, Franz; and Thomsen, Heike, to Punker GmbH Apparatebau und Warmetechnik. Radial blower, especially for oil burners. 3,824,028, Cl. 415-53.000.
Ziaylek, Theodore, Jr. Positive locking device. 3,823,907, Cl. 248-313.000.
Zinno, Oscar, to Costruzioni Meccaniche Industriali Genovesi C.M.I. S.p.A. Support and drawing device for rotary converters and rotary converters so obtained. 3,823,930, Cl. 266-36.00p.
Zinser-Texilmaschinen GmbH: *See—*
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Zoecon Corporation: *See—*
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Zoppi, Bruno, to Fabbrica Italiana Magneti Marelli S.p.A. Hydraulic driving unit for windshield wipers in motor vehicles. 3,823,561, Cl. 60-592.000.
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF JULY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Augustsson, Bengt O., and R. D. Southwick, to Glass Container Manufacturers Institute, Inc. Vapor deposition apparatus including air mask. Re. 28,076, 7–16–74, Cl. 118—48.

Caravan Products Co., Inc.: *See*—
Smerak, Louis J., and Miller. Re. 28,074.

Glass Container Manufacturers Institute, Inc.: *See*—
Augustsson, Bengt O., and Southwick. Re. 28,076.

Kavanaugh, Richard J., to North American Philips Corp. Double claw tooth stator synchronous and stepping motor with indicator. Re. 28,075, 7–16–74, Cl. 310—49.

Meltzer, Morris, and D. D. Meyer. Automatic meat cutting machine. Re. 28,077, 7–16–74, Cl. 83—101.

Meyer, Donald D.: *See*—
Meltzer, Morris, and Meyer. Re. 28,077.

Miller, Jason A.: *See*—
Smerak, Louis J., and Miller. Re. 28,074.

North American Philips Corp.: *See*—
Kavanaugh, Richard J. Re. 28,075.

Smerak, Louis J., and J. A. Miller, to Caravan Products Co., Inc. Yeast Leavened bread dough composition and process of manufacture. Re. 28,074, 7–16–74, Cl. 426—20.

Southwick, Russell D.: *See*—
Augustsson, Bengt O., and Southwick. Re. 28,076.

LIST OF DESIGN PATENTEES

Allenbaugh, George G., Jr., to Premier Industrial Corp. Portable hydrant. 232,090, 7–16–74, Cl. D23—12.

Amana Refrigeration, Inc.: *See*—
Pink, John J., and Boldt. 232,087.

American Orthodontics Corp.: *See*—
Christiansen, John J. 232,061.

Applied Fiberoptics Inc.: *See*—
Kloots, Jacobus, and Buhler. 232,119.

Applied Materials Technology, Inc.: *See*—
Benzing, Walter. 232,085.
Graham, Charles H. 232,086.

Armstrong, Evans, Jr., and D. Hill, to World Carpets. Carpet. 232,131, 7–16–74, Cl. D92—4.

Benzing, Walter C., to Applied Materials Technology, Inc. Automatic fluid flow control unit. 232,085, 7–16–74, Cl. D16—2.

Binks, Ronald, to Global Systems Design Corp. Telephone dialing instrument. 232,100, 7–16–74, Cl. D26—14.

Bjarsch, Otto. Ventilator. 232,094, 7–16–74, Cl. D23—151.

Blumenaus, Jon, to World Carpets. Carpet. 232,132, 7–16–74, Cl. D92—4.

Boldt, Melvin H.: *See*—
Pink, John J., and Boldt. 232,087.

Bruce Plastics, Inc.: *See*—
Szabo, Bela G. 232,072.

Buhler, Rato: *See*—
Kloots, Jacobus, and Buhler. 232,119.

Burkett, David L. Purse. 232,130, 7–16–74, Cl. D87—3.

Christiansen, John J., to American Orthodontics Corp. Button or the like. 232,061, 7–16–74, Cl. D2—436.

Claassen, Franciscus J. Animal scratching device. 232,105, 7–16–74, Cl. D30—40.

Clark, John. Non-clog gutter or similar article. 232,091, 7–16–74, Cl. D23—45.

Cognata, Larry M., to The Murray Ohio Mfg. Co. Combined housing, deflector and motor shroud arrangement for a rotary lawnmower. 232,117, 7–16–74, Cl. D40—1.

Colgate-Palmolive Co.: *See*—
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Metzner, Irving L., and O'Connell. 232,133.

Continental Hair Products, Inc.: *See*—
Rizzuto, Leandro. 232,128.

Conway, Ronald I., R. V. Jones, and D. L. Schaum, to International Business Machines Corp. Teller station. 232,126, 7–16–74, Cl. D64—11.

Cooper, Howard. Bottle. 232,074, 7–16–74, Cl. D9—28.

Cooper, Howard. Bottle. 232,075, 7–16–74, Cl. D9—28.

Corning Glass Works: *See*—
Zine, Anthony R., Jr. 232,081.

Crane Co.: *See*—
Schrock, Donald C. 232,092.

Daenen, Robert, to Dart Industries Inc. Food storage dish. 232,065, 7–16–74, Cl. D7—16.

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261 3,823,776
266 3,823,777
313 3,823,778

CLASS 169
39 3,823,779

CLASS 172
150 3,823,780
192 3,823,781
292 3,823,782
802 3,823,783

CLASS 173
1 3,823,784
90 3,823,785
126 3,823,786

CLASS 174
17LF 3,824,327
52PE 3,824,328
65R 3,824,329
102D 3,824,330
135 3,824,331

CLASS 175
24 3,823,787
94 3,823,788
340 3,823,789

CLASS 176
78 3,824,153

CLASS 178
5.1 3,824,332
5.8R 3,824,333
6 3,824,334
6.6A 3,824,335
6.8 3,824,336
7.1 3,824,337
7.3R 3,824,338
7.81 3,824,339
69.5DC 3,824,340
88 3,824,341

CLASS 179
1CN 3,824,344
1GQ 3,824,342
1VL 3,824,345
1E 3,824,343
15BM 3,824,347
15BS 3,824,349
15BT 3,824,346
18AB 3,824,348
3,824,350
90B 3,824,351
100.41P 3,824,352
164 3,824,353

CLASS 180
6.66 3,823,791
6.7 3,823,790
82 3,823,792

CLASS 181
33G 3,823,794
33K 3,823,793
36A 3,823,795
49 3,823,796

CLASS 184
16 3,823,797

CLASS 188
71.4 3,823,798
78 3,823,799
303 3,823,800

CLASS 192
87.19 3,823,801
113B 3,823,802

CLASS 193
2.88 3,823,803

CLASS 195
63 3,824,150
142 3,824,151

CLASS 197
6.1 3,823,804
19 3,823,805
33 3,823,806
55 3,823,807
133R 3,823,808

CLASS 198
25 3,823,809
26 3,823,810
29 3,823,811
31AB 3,823,812
76 3,823,813
273 3,823,815

CLASS 200
1R 3,824,354
16F 3,824,355
38B 3,824,357
61.86 3,824,356
83S 3,824,358
146R 3,824,359
148A 3,824,360
148F 3,824,361
153J 3,824,362
328 3,824,363

CLASS 202
174 3,824,154
3,824,155
180 3,824,156

CLASS 203
18 3,824,177

CLASS 204
1T 3,824,157
55R 3,824,158
58 3,824,159
89 3,824,160
108 3,824,162
130 3,824,163
159.23 3,824,164
180G 3,824,165
195M 3,824,169
3,824,170
3,824,171
195R 3,824,166
3,824,167
3,824,168
269 3,824,172
284 3,824,173
290F 3,824,174
3,824,175
297R 3,824,176

CLASS 206
.5 3,823,816
225 3,823,814
349 3,823,817
390 3,823,818

CLASS 208
108 3,824,178
3,824,179
111 3,824,180
143 3,824,181
188 3,824,182
263 3,824,183

CLASS 209
12 3,823,819
44 3,823,820
74R 3,823,821
80 3,823,822

CLASS 210
1 3,824,184
3 3,824,185
7 3,824,186
79 3,823,823
86 3,823,824
170 3,823,825
225 3,823,826
238 3,823,827
242 3,823,828
321 3,823,829
330 3,823,830
408 3,823,831

CLASS 211
119.01 3,823,832

CLASS 213
40R 3,823,833

CLASS 214
6DK 3,823,834
3,823,835
16.4R 3,823,836
17D 3,823,837
356 3,823,838
450 3,823,839

CLASS 215
247 3,823,840
251 3,823,841

CLASS 219
10.51 3,824,364
10.55 3,824,365
10.77 3,824,366
10.79 3,824,367
121EB 3,824,369
121LM 3,824,368
208 3,824,370
230 3,824,371
287 3,824,372
494 3,824,373
510 3,824,374

CLASS 220
1B 3,823,842
42A 3,823,843

CLASS 221
13 3,823,844
59 3,823,845

CLASS 222
70 3,823,846
79 3,823,847
82 3,823,848
96 3,823,849
107 3,823,850
146HA 3,823,851
185 3,823,852
361 3,823,853

CLASS 223
73 3,823,854
96 3,823,855

CLASS 224
36 3,823,856
42.24 3,823,857
3,823,858

CLASS 226
118 3,823,859
199 3,823,860

CLASS 227
153 3,823,861

CLASS 228
4 3,823,862
6 3,823,863

CLASS 229
19 3,823,864
44CB 3,823,865
51TS 3,823,866
69 3,823,867

CLASS 233
20A 3,823,868
20R 3,823,869

CLASS 235
61.11J 3,824,376
61.7B 3,824,375
92PD 3,824,377
92PE 3,824,378
3,824,379
117R 3,824,389
150.2 3,824,380
150.22 3,824,381
150.27 3,824,386
150.3 3,824,385
150.53 3,824,382
151.1 3,824,387
151.12 3,824,388
153R 3,824,383
156 3,824,384
197 3,823,871

CLASS 236
49 3,823,870

CLASS 239
8 3,823,872
54 3,823,873
65 3,823,874
419.5 3,823,875
504 3,823,876

CLASS 241
19 3,823,877
69 3,823,878
79.1 3,823,881
86 3,823,880
101.2 3,823,879
152R 3,823,882

CLASS 242
7.23 3,823,883
18PW 3,823,884
18A 3,823,885
43.1 3,823,886
55 3,823,888
55.18 3,823,890
55.2 3,823,889
56.2 3,823,887
71.1 3,823,891
72 3,823,892
107.4 3,823,893
137.1 3,823,894
186 3,823,895
191 3,823,896

CLASS 244
12R 3,823,897
55 3,823,898
103W 3,823,899
118P 3,823,900
118R 3,823,901

CLASS 248
2 3,823,902
18 3,823,903
23 3,823,904
87 3,823,905
279 3,823,906
313 3,823,907
351 3,823,908
452 3,823,909

CLASS 249
14 3,823,910

CLASS 250
208 3,824,391
221 3,824,392
222PC 3,824,393
251 3,824,394
294 3,824,390
308 3,824,395
312 3,824,396
320 3,824,397
325 3,824,398
336 3,824,399
552 3,824,400
561 3,824,401
565 3,824,402

CLASS 251
167 3,823,911
305 3,823,912
3,823,913

CLASS 252
1 3,824,187
95 3,824,188
99 3,824,189
106 3,824,190
378R 3,824,191
400A 3,824,192
412 3,824,193
437 3,824,195
455R 3,824,196
458 3,824,194

CLASS 254
78 3,823,914
122 3,823,915
132 3,823,916
139.1 3,823,917
141 3,823,918

CLASS 259
2 3,823,919
10 3,823,920
192 3,823,921

CLASS 260
2D 3,824,197
3,824,198
2.5AZ 3,824,199
2.5R 3,824,200
18TN 3,824,201
23XA 3,824,202
23.7H 3,824,203
29.1R 3,824,204
29.7P 3,824,205
33.6AQ 3,824,206
37SB 3,824,208
37N 3,824,207
45.75K 3,824,210
45.9R 3,824,209
47EP 3,824,212
47C 3,824,211
3,824,213
52 3,824,214
3,824,215
75R 3,824,216
77.5R 3,824,217
79.3R 3,824,219
3,824,220
80PS 3,824,221
80.71 3,824,222
85.3R 3,824,223
3,824,224
88.3R 3,824,225
94.3 3,824,226
112.5 3,824,227
117 3,824,228
211.5R 3,824,229
239.3R 3,824,231
239.3T 3,824,230
240C 3,824,236
240G 3,824,233
243C 3,824,237
3,824,238
247.5R 3,824,234
249.5 3,824,239
3,824,240
249.6 3,824,232
268C 3,824,243
294.8R 3,824,241
295AM 3,824,245
295F 3,824,244
295R 3,824,242
302SD 3,824,246
306.8D 3,824,247
307F 3,824,248
308D 3,824,249
310A 3,824,250
3,824,251
319.1 3,824,252
327S 3,824,253
343.2S 3,824,254
343.6 3,824,255
343.9 3,824,256
3,824,257
346.2R 3,824,258
348R 3,824,259
348.5L 3,824,235
397.1 3,824,260
403 3,824,261
409 3,824,262
410.6 3,824,263
429.7 3,824,264
436 3,824,265
453AB 3,824,266
455R 3,824,267
3,824,268
456A 3,824,269
465B 3,824,270
465D 3,824,271
468J 3,824,272
473R 3,824,273
3,824,274
475SC 3,824,275
490 3,824,276
521A 3,824,277
521R 3,824,278
535P 3,824,279
544C 3,824,280
545R 3,824,281
551R 3,824,282
555A 3,824,283
559AT 3,824,285
559R 3,824,284
561R 3,824,286
3,824,287
565 3,824,288
583H 3,824,290
583P 3,824,289
598 3,824,291
602 3,824,292
607A 3,824,293
611B 3,824,294
614R 3,824,295
633 3,824,296

CLASS 261
92 3,823,922
93 3,823,923
94 3,823,924
98 3,823,925
106 3,823,926

CLASS 264
25 3,824,297
41 3,824,299
47 3,824,300
161 3,824,298

CLASS 266
5EI 3,823,927
23M 3,823,928
34L 3,823,929
36P 3,823,930
42 3,823,931

CLASS 267
133 3,823,932

CLASS 269
328 3,823,933

CLASS 270
18 3,823,934
61R 3,823,935

CLASS 271
118 3,823,936
276 3,823,937

CLASS 273
30 3,823,938
55R 3,823,939
59R 3,823,940
86B 3,823,941
100 3,823,942
131A 3,823,943
136F 3,823,944

CLASS 274
9B 3,823,948
9R 3,823,946
11E 3,823,947

CLASS 277
22 3,823,949
70 3,823,950
208 3,823,951

CLASS 280
11.13L 3,823,956
11.2 3,823,952
11.35B 3,823,953
11.35T 3,823,954
3,823,955
94 3,823,957
150.5 3,823,958
234 3,823,959
432 3,823,960
3,823,961
514 3,823,962

CLASS 283
66 3,823,963

CLASS 285
46 3,823,964
174 3,823,965

CLASS 292
216 3,823,966
258 3,823,967

CLASS 293
71P 3,823,969
84 3,823,968

CLASS 294
19R 3,823,970
26 3,823,971
73 3,823,972
3,823,973

CLASS 296
23MC 3,823,974
23R 3,823,975
35R 3,823,976
137B 3,823,977

CLASS 297
330 3,823,979
388 3,823,978
455 3,823,980

CLASS 299
4 3,823,981

CLASS 301
37P 3,823,982
43 3,823,983

CLASS 303
3 3,823,984
7 3,823,985
21F 3,823,986
3,823,987
3,823,988

CLASS 305
14 3,823,989

CLASS 307
10AT 3,824,403
10LS 3,824,405
10R 3,824,404
87 3,824,406
88MP 3,824,407
214 3,824,408
232 3,824,409
233 3,824,410
262 3,824,411
269 3,824,412
295 3,824,413

CLASS 308
10 3,823,990
73 3,823,991

CLASS 310
13 3,824,414
41 3,824,415
49 Re. 28,075
51 3,824,416
3,824,417
71 3,824,418
80 3,824,420
89 3,824,419

CLASS 312
21 3,823,993
201 3,823,992

CLASS 313
110 3,824,421
218 3,824,422
225 3,824,423
341 3,824,424

CLASS 315
3.5 3,824,425
27GD 3,824,426
29 3,824,427
105 3,824,428
209R 3,824,429

CLASS 316
26 3,823,994

CLASS 317
13R 3,824,430
61 3,824,431
79 3,824,432
101CE 3,824,433
141S 3,824,434
157 3,824,435
234R 3,824,436

CLASS 318
227 3,824,437
631 3,824,438
667 3,824,439
696 3,824,440

CLASS 321
2 3,824,441
5 3,824,442
3,824,443

	3,824,444
11	3,824,445
12	3,824,446
15	3,824,447
CLASS 322	
2	3,824,448
CLASS 323	
6	3,824,449
23	3,824,450
CLASS 324	
.5R	3,824,451
	3,824,452
29	3,824,453
32	3,824,454
34FL	3,824,456
34R	3,824,455
43R	3,824,457
57R	3,824,458
60CD	3,824,459
61R	3,824,460
	3,824,461
73PC	3,824,462
179	3,824,463
186	3,824,464
CLASS 325	
16	3,824,465
30	3,824,466
32	3,824,467
	3,824,468
39	3,824,469
45	3,824,470
321	3,824,471
355	3,824,472
375	3,824,473
420	3,824,474
470	3,824,475
CLASS 328	
4	3,824,476
	3,824,477
37	3,824,478
69	3,824,479
75	3,824,480
162	3,824,481
CLASS 330	
4.9	3,824,482
CLASS 331	
1A	3,824,483
48	3,824,484
55	3,824,485
65	3,824,486
94.5C	3,824,487
94.5H	3,824,493
94.5K	3,824,488
94.5	3,824,492
107R	3,824,489
	3,824,490
109	3,824,491
111	3,824,494
116R	3,824,495
132	3,824,496
141	3,824,497
CLASS 332	
9R	3,824,498
16R	3,824,499
CLASS 333	
6	3,824,500
18	3,824,501
24.1	3,824,502
26	3,824,503
30R	3,824,505
73W	3,824,504
81A	3,824,506
CLASS 334	
47	3,824,507
CLASS 335	
16	3,824,508
132	3,824,509
160	3,824,510
202	3,824,511
205	3,824,512
207	3,824,513
210	3,824,514
213	3,824,515
284	3,824,516
CLASS 336	
83	3,824,517
96	3,824,518
192	3,824,519
CLASS 337	
161	3,824,520
CLASS 338	
275	3,824,521
CLASS 339	
21R	3,824,522
59R	3,824,523
60R	3,824,524
91R	3,824,525
94R	3,824,526
97C	3,824,528
97R	3,824,527
99R	3,824,530
99	3,824,529
128	3,824,552
198GA	3,824,553
221R	3,824,554
246	3,824,555
258R	3,824,557
268S	3,824,556
CLASS 340	
3R	3,824,531
15	3,824,532
18DC	3,824,533
24	3,824,534
27NA	3,824,535
52R	3,824,536
53	3,824,537
	3,824,538
63	3,824,540
65	3,824,539
	3,824,541
81R	3,824,542
146.1BA	3,824,547
146.1E	3,824,548
146.3AC	3,824,549
146.3F	3,824,546
147CN	3,824,543
147A	3,824,544
151	3,824,545
	3,824,550
172.5	3,824,551
	3,824,558
	3,824,559
	3,824,560
	3,824,561
	3,824,562
	3,824,563
173R	3,824,564
174DC	3,824,569
174PW	3,824,566
174RF	3,824,573
174TF	3,824,565
	3,824,567
	3,824,568
	3,824,571
174YC	3,824,570
174.1C	3,824,572
213Q	3,824,574
241	3,824,575
258C	3,824,576
262	3,824,577
267C	3,824,578
269	3,824,579
324M	3,824,580
324R	3,824,581
336	3,824,582
347AD	3,824,584
	3,824,586
	3,824,590
347CC	3,824,588
347DD	3,824,589
347NT	3,824,585
347P	3,824,587
347R	3,824,583
381R	3,824,591
CLASS 343	
13R	3,824,592
17	3,824,593
108R	3,824,594
113R	3,824,595
	3,824,596
204	3,824,597
405	3,824,598
822	3,824,599
895	3,824,600
CLASS 346	
74.1	3,824,601
139C	3,824,602
141	3,824,603
CLASS 350	
96WG	3,823,995
	3,823,996
	3,823,997
150	3,823,998
160LC	3,824,002
	3,824,003
173	3,824,004
216	3,823,999
245	3,824,000
305	3,824,001
CLASS 351	
8	3,824,005
106	3,824,006
CLASS 352	
130	3,824,007
CLASS 353	
26	3,824,008
27	3,824,009
CLASS 354	
5	3,824,604
42	3,824,605
50	3,824,606
	3,824,607
	3,824,608
102	3,824,609
139	3,824,610
202	3,824,611
266	3,824,612
281	3,824,613
292	3,824,614
331	3,824,615
339	3,824,616
CLASS 355	
3R	3,824,010
	3,824,012
3	3,824,011
67	3,824,013
75	3,824,014
CLASS 356	
	3,824,015
85	3,824,016
108	3,824,017
112	3,824,018
145	3,824,019
152	3,824,020
200	3,824,021
CLASS 360	
16	3,824,617
22	3,824,618
36	3,824,619
38	3,824,620
78	3,824,621
96	3,823,945
121	3,824,622
124	3,824,623
CLASS 401	
6	3,824,022
193	3,824,024
258	3,824,023
CLASS 404	
48	3,824,025
CLASS 408	
210	3,824,026
225	3,824,027
CLASS 415	
53	3,824,028
109	3,824,029
135	3,824,031
136	3,824,030
150	3,824,032
151	3,824,033
217	3,824,034
219C	3,824,035
CLASS 416	
95	3,824,036
136	3,824,037
180	3,824,038
CLASS 417	
48	3,824,039
204	3,824,040
310	3,824,041
424	3,824,042
440	3,824,043
CLASS 418	
12	3,824,044
30	3,824,045
82	3,824,046
171	3,824,047
CLASS 423	
	3,824,161
561	3,824,301
625	3,824,302
CLASS 424	
47	3,824,303
74	3,824,304
78	3,824,218
118	3,824,305
225	3,824,306
245	3,824,307
251	3,824,308
	3,824,315
267	3,824,311
269	3,824,312
272	3,824,309
273	3,824,310
274	3,824,313
	3,824,314
275	3,824,316
277	3,824,317
	3,824,318
278	3,824,319
298	3,824,320
CLASS 425	
28R	3,824,048
71	3,824,049
72	3,824,050
78	3,824,051
83	3,824,052
123	3,824,053
149	3,824,054
220	3,824,055
266	3,824,056
329	3,824,057
338	3,824,058
424	3,824,059
425	3,824,060
435	3,824,061
451	3,824,062
CLASS 426	
20	Re.28,074
65	3,824,321
134	3,824,322
429	3,824,323
CLASS 431	
255	3,824,063
	3,824,072
284	3,824,073
328	3,824,064
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